November 1959
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VOLUME 49 NUMBER 11

AMERICAN Journal of Public Health

AND THE NATION'S HEALTH

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AMERICAN
Journal of Public Health
AND THE NATION'S HEALTH

CONTENTS • NOVEMBER 1959

VOL. 49, NO. 11

Articles PAGE

Acute Intestinal Disease in the Arctic 1441
JOHN E. GORDON, M.D., Ph.D., and FRANK L. BABBOTT, JR., M.D., M.P.H.

Factors in Participation in the 1954 Poliomyelitis Vaccine Field Trials, Erie County, New York 1454
WARREN WINKELSTEIN, JR., M.D., M.P.H., and SAXON GRAHAM, Ph.D.

Characteristics of Families Served by Homemakers 1467
MARYLAND Y. PENNELL, M.Sc., and LUCILLE M. SMITH

Dual Choice Programs 1475
AVRAM YEDIDIA

Newer Aspects of Adenovirus Infections 1480
HAROLD S. GINSBERG, M.D.

Characteristics of the SE Polyoma Virus 1486
BERNICE E. EDDY, Ph.D., and SARAH E. STEWART, M.D., Ph.D.

Tumor Induction by SE Polyoma Virus and the Inhibition of Tumors by Specific Neutralizing Antibodies 1493
SARAH E. STEWART, M.D., Ph.D., and BERNICE E. EDDY, Ph.D.

Cigarette Smoking Among High School Students 1497
DANIEL HORN, Ph.D.; FREDERICK A. COURTS, Ph.D.; ROBERT M. TAYLOR, M.A.; and ERWIN S. SOLOMON, M.A.

Utilization of Laboratory Findings in Diagnosis and Control of Hospital Staphylococcal Infections 1512
JOSEPH A. BASS, Ph.D., and HARRIET M. FELTON, M.D., D.Sc.M.

Unoperated Oral Clefts at Maturation. I. Study Design and General Considerations 1517
FRANK E. LAW, D.D.S., M.P.H., and JOHN T. FULTON, D.D.S.

Continued on page iv

Articles, continued

PAGE

Methods of Studying the Relation of Employment and Long-Term Illness—Cohort Analysis 1525
THOMAS F. MANCUSO, M.D., M.P.H., and ELIZABETH JACKSON COULTER, Ph.D.

Behavior Disturbances of School Children in Relation to the Preschool Period 1537
ELLA OPPENHEIMER, M.D., and MARGARET R. MANDEL, M.A.

Journal Departments

EDITORIALS:

Medical Care for the Needy—A Public Health Problem 1543

A Regimen of Health 1545

Letter to the Editor:

Re: Editorial "Local Public Health Today" 1547
JESSE B. ARONSON, M.D.

Legislative News 1548

Association News 1551
New Officers for 1959-1960. MALCOLM H. MERRILL, M.D.—The New President. Foreign Students Attending Schools of Public Health in the United States. A Behavioral Sciences Institute.

News of Affiliated Societies and Branches 1554

Employment Service 1559

Book Reviews 1564

Books Received 1570

A Selected Public Health Bibliography with Annotations 1572
RAYMOND S. PATTERSON, Ph.D.

Credit Lines 1575

News from the Field 1582

Conferences and Dates 1590

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*Livingston, S., and Petersen, D.: New England J. Med. 254:327 (Feb. 16) 1956.

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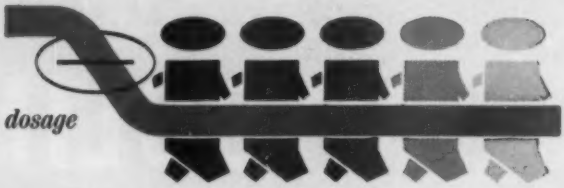

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INDEX TO ADVERTISERS

	Page
American Public Health Association:	
Book Service	XXXII, XXXIV
Membership Application Blank.	XXXIII
Alconox, Inc.	XXXV
American Bottlers of Carbonated Beverages	XXVIII
American Cyanamid Company, Lederle Laboratories Division	XXXIV
American Optical Company	XXV
Ayerst Laboratories	V
Baltimore Biological Laboratory, Inc.	II
Ciba Limited	XVIII
Coca-Cola	XXXIII
Difco Laboratories	Back Cover
Directory of Health Service	XXXV
Black & Veatch	
Dickman Laboratories	
Roy B. Everson	
Newing Laboratories	
Emerson Venable, P. E.	
Professional Examination Service, APHA	
Eaton Laboratories	X, XI, XX
Hoffmann-La Roche Inc.	XII
Kimble Glass Company	VIII, IX
LaMotte Chemical Products Co.	XXXI
Lehn & Fink Products Corp.	XXXVII
Lilly, Eli, & Co.	XXIV
Lily-Tulip Cup Corp.	XXIX
Maltbie Laboratories	XXIII
Merck Sharp & Dohme	XIX
National Dairy Council	XIV
Oval Wood Dish Corp.	XXXI
Pfizer Laboratories, Division, Chas. Pfizer & Co., Inc.	VI, XIII
Powers X-Ray Products, Inc.	XXXI
Professional Tape Company, Inc.	XXII
Ross Laboratories	XVI
Schering Corporation	VII, XV
Squibb, E. R. & Sons	XXXVI
Sterwin Chemicals, Inc.	XXVI
Upjohn Company	XVII
Wallace & Tiernan Incorporated	XXX
Wheat Flour Institute	XXVII
Wyeth, Inc.	XXI

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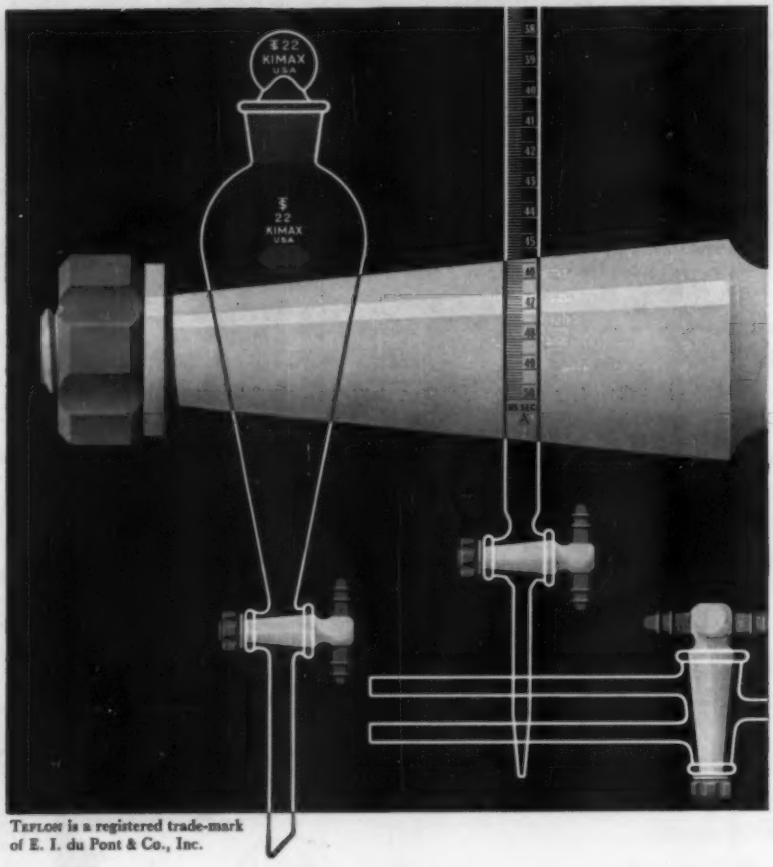

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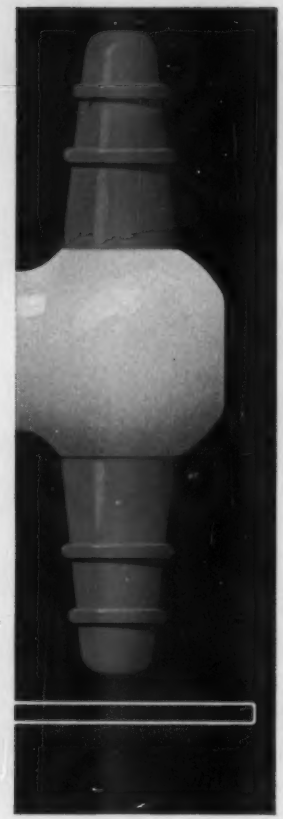

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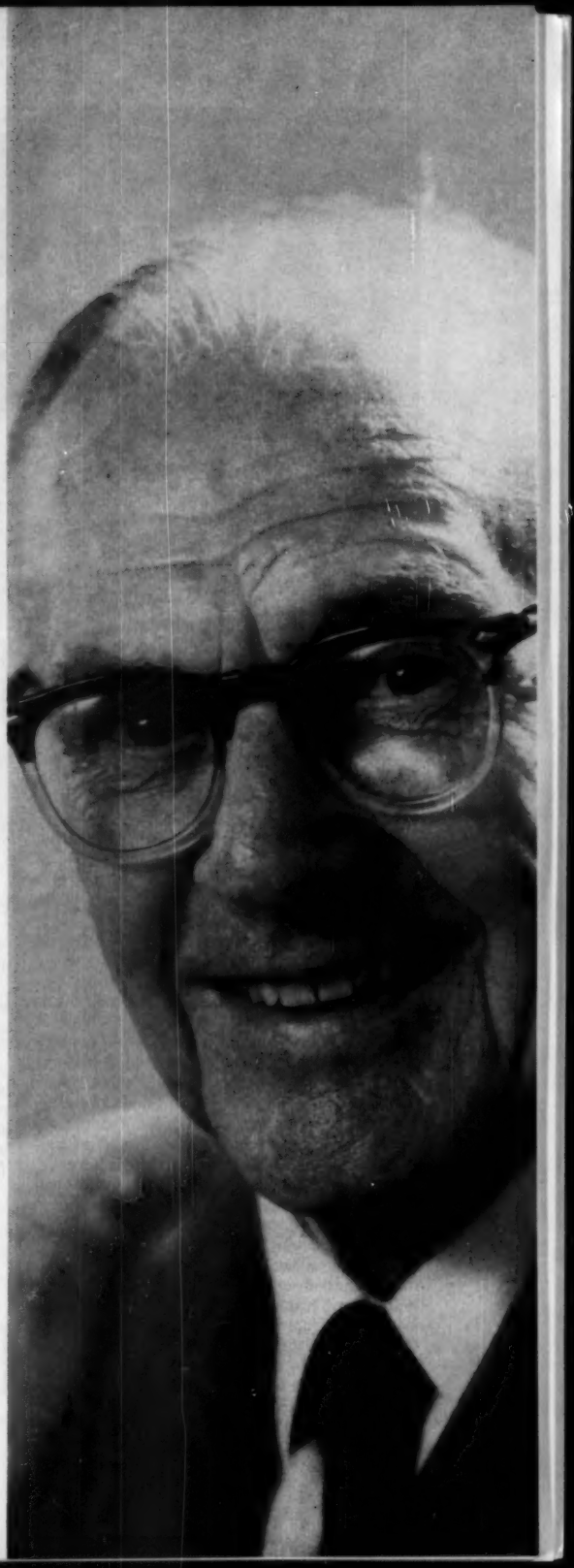

A GUIDE TO GOOD EATING — USE DAILY

DAIRY FOODS

3 to 4 glasses milk—children • 4 or more glasses—teenagers • 2 or more glasses—adults • Cheese, ice cream and other milk-made foods can supply part of the milk

MEAT GROUP

2 or more servings • Meats, fish, poultry, eggs, or cheese—with dry beans, peas, nuts as alternates

VEGETABLES AND FRUITS

4 or more servings • Include dark green or yellow vegetables; citrus fruit or tomatoes

BREADS AND CEREALS

4 or more servings • Enriched or whole-grain added milk improves nutritional values

CONTROL

Foods can provide many minerals needed for control of body functioning . . . as well as for structure of body tissues . . . but special consideration needs to be given to insure that the diet contains enough of certain minerals.

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iron . . . 1/3 from meat group . . . ¼ from vegetables and fruits . . . and 1/5 from enriched breads and cereals.

Calcium is essential to normal blood clotting, muscle contraction, nerve functioning and cell permeability . . . in addition to its main role in the growth and maintenance of bones and teeth. Iron is used in the formation of hemoglobin, the red blood pigment which carries life-giving oxygen from the lungs to body cells. Phosphorus . . . which plays a vital part in the energy metabolism of cells as well as in formation of bony tissues . . . is provided by foods in all four groups . . . especially those which supply calcium and protein. Potassium, sodium and chlorine are involved with maintaining water balance in the body. Potassium is abundant in animal and plant foods . . . sodium and chlorine are present in foods and table salt. Copper, cobalt, magnesium, manganese, molybdenum and zinc take part in various enzyme reactions . . . and are supplied in needed amounts by foods listed in the "Guide."

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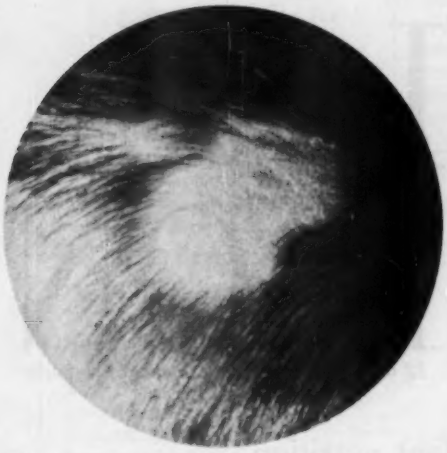
In tinea capitis



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After FULVICIN: Normal, new hair growth after 6 weeks of oral therapy.

Photos courtesy of M. M. Nierman, M.D., Calumet City, Ill.

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tinea cruris: 4 to 6 weeks[1]
onychomycosis: 4 to 6 months[1]
tinea pedis: 6 to 8 weeks[1]

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1. Robinson, H. M., Jr., *et al.*: Griseofulvin, Clinical and Experimental Studies, A.M.A. Arch. Dermat., in press.

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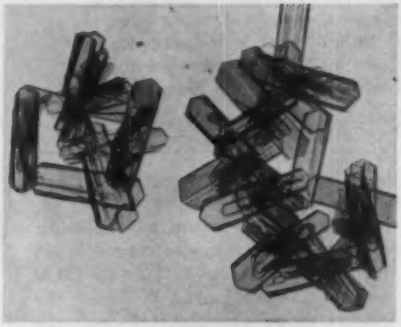

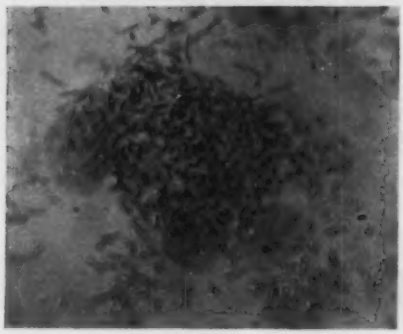

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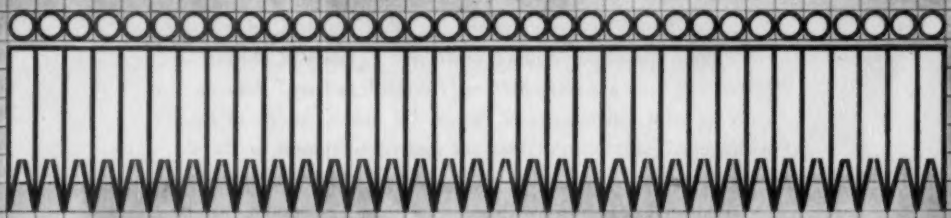
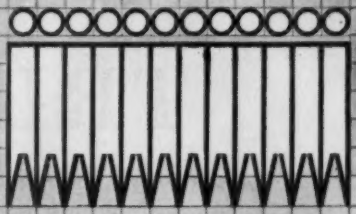
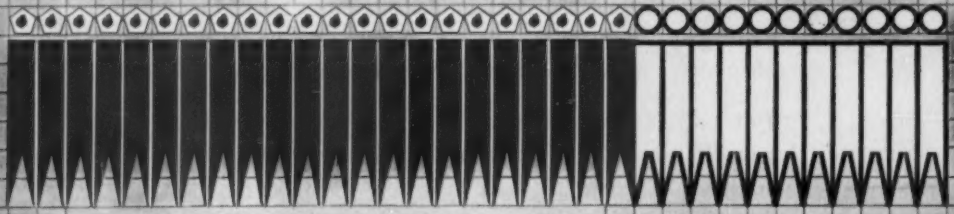
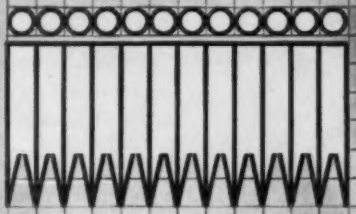


Of 45 arthritic patients
who were refractory
to other corticosteroids*





22 were successfully
treated with **Decadron** [1,2]



1. Boland, E. W., and Headley, N. E.: Paper read before the Am. Rheum. Assoc., San Francisco, Calif., June 21, 1958.
2. Bunim, J. J., et al.: Paper read before the Am. Rheum. Assoc., San Francisco, Calif., June 21, 1958.

*Cortisone, prednisone and prednisolone.

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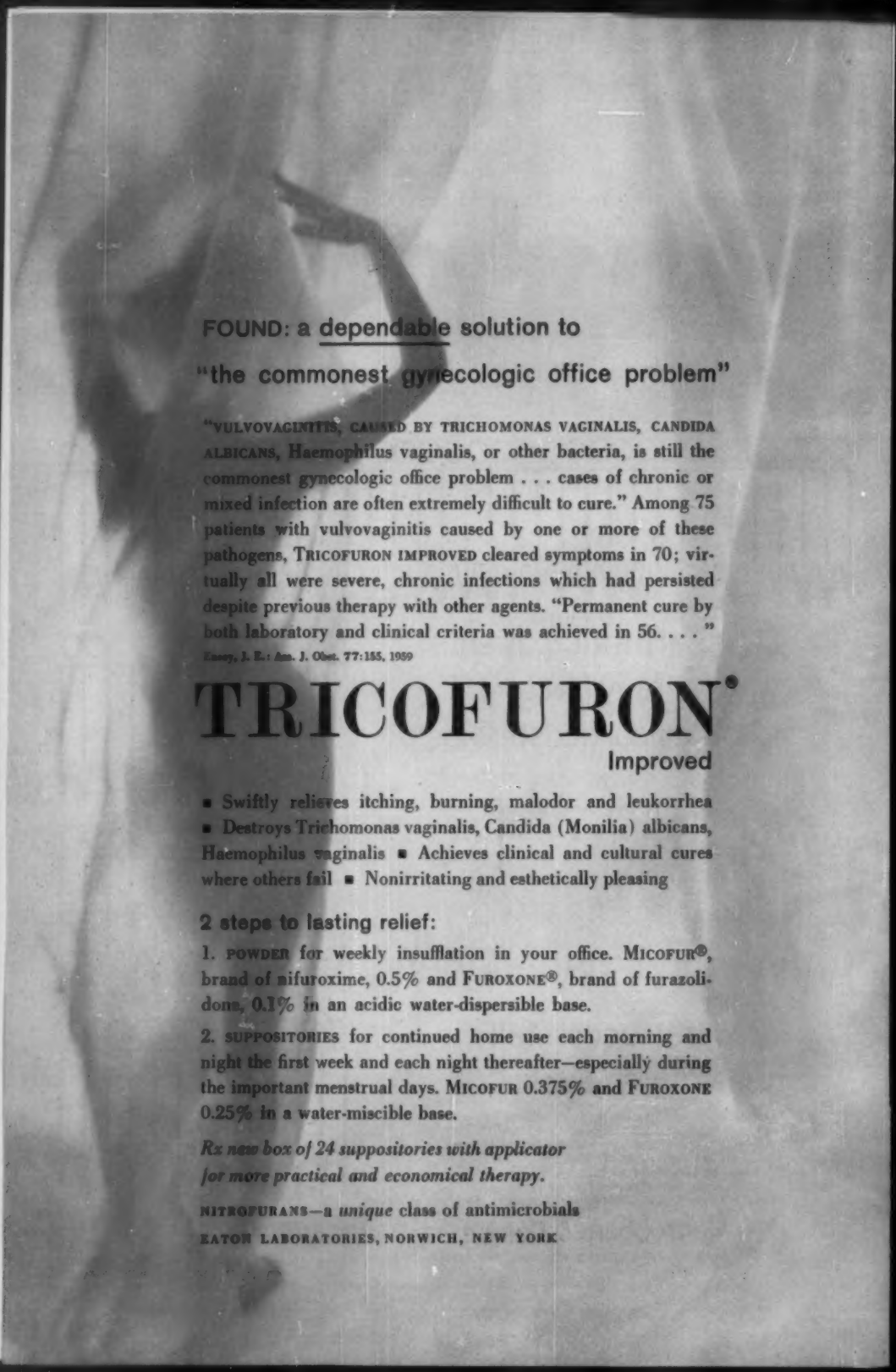

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1. Lade, R.I., et al.: Pediatrics 21:238 (Feb.) 1958.

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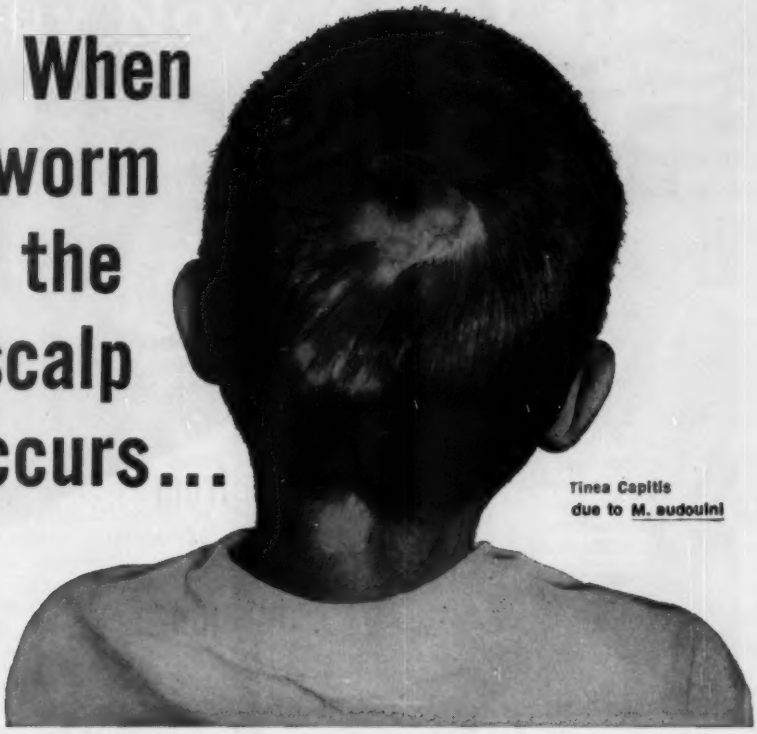

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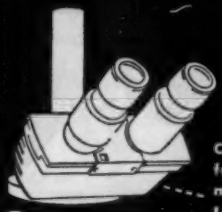

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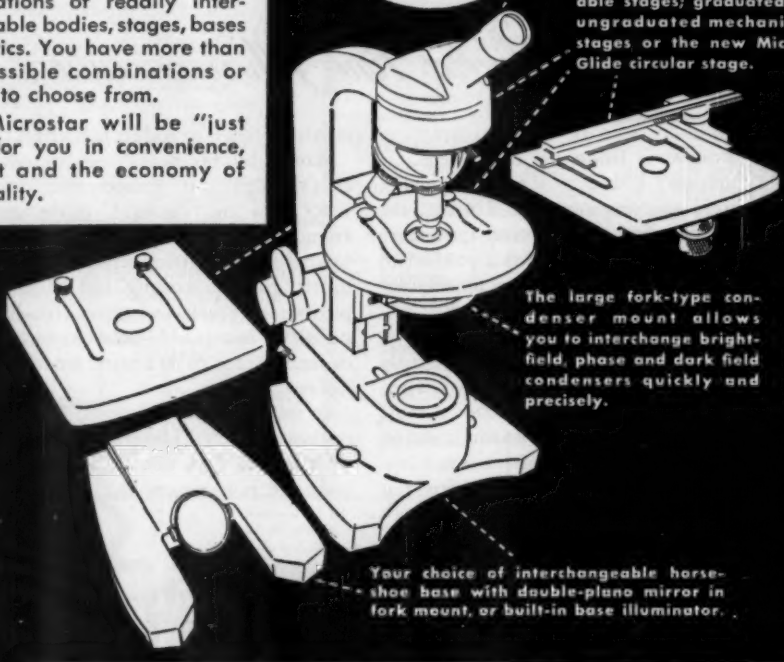

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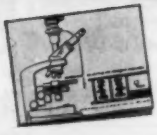

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This fall, teen-age boys and girls in every state must pass this simple nutrition quiz to qualify for participation in the National Youthpower Congress next February 11-12-13 in Chicago. The Congress is planned to foster greater public understanding of the cultural, economic and nutritional values of food. We thought you might enjoy checking this quiz yourself. (The answers are shown below.)

Question 1.

How do you define nutrition? (CHECK ONE)

a. ☐ Selection of foods good for you.
b. ☐ Digestion of food.
c. ☐ Study of foods in relation to health.
d. ☐ Knowledge of what foods are good and what foods are bad for you.

Question 2.

What is a vitamin? (CHECK ONE)

a. ☐ Something added to make food taste better.
b. ☐ An organic substance required in minute amounts for the health of the body.
c. ☐ What some foods contain to make you grow and provide energy.
d. ☐ A special class of food.

Question 3.

Basic classes of foods include: (CHECK FOUR)

a. ☐ Milk and dairy products
b. ☐ Proteins
c. ☐ Fruits and vegetables
d. ☐ Fats
e. ☐ Trace elements
f. ☐ Minerals
g. ☐ Starch
h. ☐ Vitamins
i. ☐ Whole grain, enriched or restored cereals and breads
j. ☐ Meat, fish, eggs, beans and nuts

Question 4.

Match the functions in the column at the left to the items in the right column that perform these functions. (MARK LETTERS IN SQUARES)

a. Warmth and energy
b. Growth and repair
c. Bone structure and body regulation
d. Blood formation

1. ☐ Fats and carbohydrates
2. ☐ Calcium, phosphorus and other minerals
3. ☐ Proteins
4. ☐ Iron

Question 5.

True or false? (MARK T OR F IN SQUARES)

1. ☐ Today's population in America is the best fed in history.
2. ☐ The amount of food you need depends on your age, sex and activities.
3. ☐ Eating a balanced diet is expensive.
4. ☐ A good diet should include milk products; meat; fish or eggs; fruit and vegetables; breads and cereals.
5. ☐ An overweight person is malnourished.
6. ☐ No one food supplies all the nutrients we need.
7. ☐ We all need vitamin supplements to be well nourished.
8. ☐ Sirloin is more nourishing than hamburger.
9. ☐ Your most desirable weight is about what you weigh in good health between ages 25-30.
10. ☐ People in the same family, eating the same meals all show the same signs of good or poor diet.
11. ☐ Growing heavier as we grow older is a sign of good health.

Question 6.

Listed below are essential nutrients marked 1 to 9. Each of the foods listed supply one or more of these nutrients in generous amounts.

(MATCH THE NUMBERS TO THE FOODS)

1. Vitamin C
2. Protein
3. Calcium
4. Thiamine
5. Iron
6. Vitamin A
7. Vitamin D
8. Niacin
9. Riboflavin

A._____ Cod Liver Oil
B._____ Cottage Cheese
C._____ Cantaloupe
D._____ Nuts
E._____ Enriched bread
F._____ Fortified whole milk
G._____ Butter and fortified margarine
H._____ Meat
I._____ Dry beans
J._____ Eggs
K._____ Oranges

ENRICHED . . . and whole wheat flour foods are listed among the "Essential Four" food groups set up by the U. S. Dept. of Agriculture's Institute of Home Economics. Diet selected from these foods provides ample protein, vitamins and minerals.

Answers: Q1 (c)... Q2 (b)... Q3 (a, c, i, j)... Q4 (1a, 2c, 3b, 4d)... Q5 (1T, 2T, 3F, 4T, 5T, 6T, 7F, 8F, 9T, 10F, 11F). Q6 (A. 6, 7—B. 2, 3, 9—C. 1, 6—D. 2, 8—E. 3, 4, 5, 8, 9—F. 2, 3, 6, 7, 9—G. 6—H. 2, 4, 5, 8, 9—I. 2 ,5—J. 2, 3, 6—K. 1

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- Combating food or chemical poisoning
- Stimulating appetite
- Supplying quick energy
- Lifting patient morale

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[1]McClellan, Walter S. "The Utilization of Ingested Carbon Dioxide, A Review" 1955.

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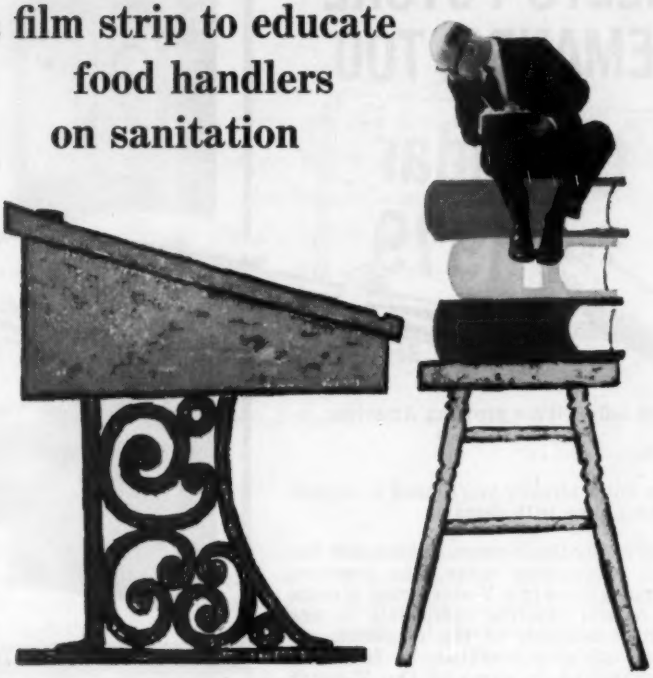

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Journal of Public Health

For a variety of reasons the arctic regions are today receiving increasing attention. Among the areas that are relatively unexplored are health and disease. Knowledge of mass behavior of disease is inadequate. All the more welcome, therefore, is the following report representing a comparative and ecologic approach to the problem.

ACUTE INTESTINAL DISEASE IN THE ARCTIC

John E. Gordon, M.D., Ph.D., F.A.P.H.A., and Frank L. Babbott, Jr., M.D., M.P.H.

ITS REMOTENESS, its forbidding nature, and the prevailing scarcity of people are some of the reasons that the arctic has lagged materially in epidemiologic activities. The arctic, however, is changing. The colder regions of the world have lost their isolation under the press of an increasing world population,[1,2] a growing need for their rich natural resources and a newly evolved military significance.[3]

Knowledge of the mass behavior of disease in the arctic suffers because of limited local health facilities and exacting difficulties in transport and communication. As a result, reporting of disease is highly incomplete. However, endemic behavior of the commoner diseases of man wherever they occur is usually to be determined only by planned field survey. The few field investigations in the arctic have had to do with special problems, such as the common cold in Spitzbergen[4] or poliomyelitis in subarctic Canada[5,6] and then usually in association with epidemics. Indeed, most of what is known derives from epidemics.

The need is to know how the everyday occurrence of disease in man is modified by the peculiarities of the arctic environment through action on infectious agent and human host.[7,8] The intestinal infections are likely material in a search for principle. Along with acute infections of the upper respiratory tract, they are as near universal diseases of man as any general class. Epidemiologic characteristics are well defined through long observation in many countries. They are known to be sensitive to differences in physical environment, and still more to the social environment provided by the popula-

tions they attack. They commonly relate to the biological environment in such matters as animal hosts, arthropod vectors, and food supply.[9] These diseases have the further advantage that basic laboratory procedures are relatively simple, a matter of consequence under the onerous conditions of field work in arctic areas. These several considerations led to plans for a field study of acute intestinal disease in cold climates.

Field operations started in June, 1954, and continued until the autumn of 1957. The laboratory phase of the investigations continued until July, 1958. The arctic is a large area and defined in a variety of ways, but for present purposes it is considered to be all the territory lying within the Arctic Circle, 66° 30′ north latitude. Contrary to common opinion, climatic and geographic characteristics are as diverse as in the tropics, or for that matter in temperate zones. Since the aim was principle, it was decided to investigate intestinal disease in the three characteristic kinds of arctic terrain, the tundra of Wainwright and Bethel, Alaska, the taiga or forests of Inari, Finland, and the Malselv Valley, Norway, and along the coastal fringe of glacial Greenland at Disko Bay. All study areas were at about the same latitude, 70° north. Essentially a year was devoted to each.

Methods of study were uniform and according to a common study design. Direction of activities and more importantly the active conduct of field operations were maintained by the same people throughout. Thereby, the identification and evaluation of differences under varying environmental conditions was favored.

The justification for this venture rests on two sorts of evidence, derived more from subarctic than artic regions but including the latter. In the first place, common infectious agents of man have been shown to be highly resistant to extreme cold; and second, outbreaks of intestinal disease are known to occur under natural conditions in cold climates.

Resistance of Human Intestinal Pathogens to Extreme Cold

Recent studies [10] on the viability of enteric pathogens showed that shigellae and salmonellae could be recovered for as long as three months from carrier stools held under laboratory conditions at temperatures of −40°C. All strains were more sensitive to freezing and thawing than to constant low temperatures, with shigellae generally more susceptible than salmonellae. These experiments subsequently were extended to field tests[11] at Fort Churchill, Canada, a subarctic zone. Feces mixed with suspensions of Salmonella paratyphi B., S. typhosa, and Shigella sonnei were placed at tundra sites in December and cultured periodically until the following July. In seeded stools maximum survival for paratyphoid bacilli was 135 days and for typhoid bacilli 45 days. Sh. sonnei could be recovered for only 17 days. In carrier feces, however, typhoid and paratyphoid bacilli were viable for about 190 days. No evidence of multiplication was obtained for any of the test organisms.

Cysts of Endameba histolytica[12] survived two months at 0° C, died rapidly at temperatures below freezing and complete destruction occurred in from two to seven hours at −28° C.

Past Occurrence of Acute Intestinal Infection in the Arctic

Sh. flexneri, Sh. sonnei, and several salmonellae have been recovered from cases and outbreaks of intestinal disease in northern Alaska[13] since laboratory facilities were established in 1936. Clinical reports of typhoid fever go back many years, including notably the great epidemic during the Klondike gold rush of 1897. Outbreaks of dysentery were

described a century and a half ago. The recorded experience relates mainly to subarctic regions but to an extent includes the arctic.

Lapland is a geographical rather than a political division comprising parts of Norway, Sweden, and Finland within the Arctic Circle, and extending slightly into the Soviet Union. A number of outbreaks of typhoid and paratyphoid fever have been reported in Finnish Lapland, a few with laboratory confirmation. Official reports of recent years[21] show no material differences in frequency of notified cases in the arctic as compared with the rest of the country. Bacillary dysentery is uncommonly reported. Information is better for subarctic Finland south of Rovaniemi than for Finnish Lapland to the north. Diarrheal disorders were so frequent in postwar Finland that the World Health Organization surveyed the situation in 1953. So far as children were concerned, Wegman[14] established the prevailing disease as due to no newly introduced infectious agent but to a resurgence of established pathogens incident to the disorganized conditions that followed the war.

Intestinal infection in Swedish Lapland is like that of neighboring Norway and Finland. Typhoid and paratyphoid fevers have been recognized. Numbers of cases per unit of population are again much the same as in southern Sweden. Gastroenteritis is relatively common. The impression of bacillary dysentery is of relative rarity and largely related to summer months. The great epidemic of salmonellosis (S. typhimurium),[15] starting in southern Sweden in 1953 and eventually involving most of the country, produced a few cases in the arctic.

Bacillary dysentery during World War II prevailed among German[16] troops in the far north around Kirkenes, Norway. Following the retreat in 1944, the disease spread among civilians and refugees, with both Sh. sonnei and Sh. flexerni identified. An extensive epidemic of paratyphoid fever B involved the Norwegian arctic in 1943-1944, making necessary a temporary emergency hospital to care for patients. Unlike Finnish Lapland, incidence declined sharply after the war.

Typhoid fever has been known in Greenland for over a century.[17] Outbreaks of acute intestinal infection recognized clinically as dysentery were recorded as long as 200 years ago. Paratyphoid fever was first identified in 1940. In general, recognition was mainly by clinical criteria but all of these infections have been confirmed bacteriologically at one time or another by the State Serum Institute in Copenhagen. Gastroenteritis, unspecified etiologically, is among the commoner infections reported from arctic Greenland.

Information on helminths and protozoa in truly arctic populations is decidedly meager. A single survey by Hitchcock[18] with examination of multiple fecal specimens from 100 persons is all that is known of arctic Alaska. No E. histolytica were found in these Kotzebue studies. Diphyllobothrium sp. was harbored by 6 per cent, with E. vermicularis present in 43 per cent of persons studied. Infection rates for a similar group in the subarctic town of Bethel were slightly greater for pin worms, 15 per cent for fish tapeworm, and E. histolytica was present in 3 per cent. Diphyllobothriasis has been demonstrated with relative frequency in Indian and Eskimo populations of northern Canada, and amebiasis occasionally.[19] The situation in arctic Greenland is essentially unknown, and no systematic survey has been made in Lapland, although most physicians will recall an occasional case of diphyllobothriasis, especially in Finnish Lapland.

From what is known of acute intestinal disease in the arctic, gastroenteritis thus appears to be relatively common

and well established, with most diarrheal disorders due to infection. The abnormal fatality suggests that some of the more important pathogens are included among infectious agents; this is confirmed by occasional demonstration of shigellae and salmonellae in epidemics. Experimental evidence proves that these bacterial pathogens are resistant to cold and other features of the natural arctic environment. The recorded frequency of epidemics is sufficient to suggest an origin from endemic rather than imported infection.

The incidence of gastroenteritis is most indefinite, as are prevalence, seasonal distribution, variation by age and by other population characteristics. The relative frequency of the several common bacterial pathogens in clinical disease is unknown; also their frequency in relation to other causes of acute diarrheal disease, such as intoxications, parasitic infections, and among infants nutritional disturbances and parenteral infection. Carrier rates as an indicator of extent of seeding of infection in populations have not been determined. What is known of the causes of epidemics rests largely on fortuitous observation of the more outstanding events. Information on mode of transmission, so fundamental to control, has not been explored by modern methods. Consequently the field studies reported here have been concerned mainly with the endemic behavior of acute intestinal disease, a determination of incidence and prevalence of gastroenteritis. The aim is to judge the relative distribution of that complex among established bacterial, parasitic, and unknown causes. Epidemics were studied as opportunity permitted. Carrier rates of bacterial pathogens were determined for population groups by season. The primary consideration in endemic and epidemic studies was mode of transmission as modified and qualified by the arctic environment.

Study Design

The details of field and laboratory methods are given in reports of the individual studies.[20,21] Field activities in all areas were in cooperation with national and local health authorities. Staff members of health departments or universities participated in each instance. The knowledge of local conditions and command of language thus provided are essential features of field operations in foreign countries and always desirable. A field laboratory was established at each work site, often as the first in that particular arctic region. Base laboratory facilities for typing and confirmation of strains were regularly those of the particular country, for example the State Serum Institute of Copenhagen for Greenland and the University of Turku for Finland.

Incidence of acute diarrheal disease was determined by family interview covering the history of past illness during the preceding year by months. This was compared with officially reported cases.

Fecal specimens were collected and examined for bacterial pathogens, helminths, and protozoa. A community census was made, but refinements of sampling were a minor consideration since data were obtained from an average of 86 per cent of these small populations. Prevalence was by direct observation of sick persons during family visits. The nature and distribution of infectious agents in study areas came from cases recognized during field visits, enlarged by case reports and stool specimens from the practices of local physicians.

Incidence of Diarrheal Disease by Field Survey

Field surveys by family interview to determine the frequency of acute diarrheal disease were made in arctic

Alaska, Finland, Norway, and Greenland. This and other experience demonstrate that memory of acute, short-term, and more or less ordinary illness is best for the month of survey and the preceding month. Within the span of a year, information is progressively less reliable and is poor for the remote past. Annual rates obtained by interview in summer, the season of greatest prevalence, would thus be higher than those derived from winter survey. Winter surveys were made in Alaska and Finland, while summer or late summer surveys were conducted in all four areas. Annual rates based on the latter appear in Table 1. They permit gross comparison of conditions in the several regions, recognizing that local circumstances lead to variations from an established usual behavior in an individual year anywhere. In these studies, such variations held particularly for a winter epidemic encountered in Finland.

The rates in Greenland are highest, 566 per 1,000 population per year, and for Alaska 205, less than would have been expected with such similar environmental conditions. Because of distinctive differences in physical and social environment, measurably lower rates were anticipated in Finnish Lapland; the observed value was 130 per 1,000 per year. Rates for arctic Norway, 194 per 1,000 per year, were greater than expected with conditions so much alike in the two Lapland areas. The Malselv Valley at the time of survey was experiencing an epidemic of acute diarrheal disease, as reported by Woien of our group.[22] On the basis of survey cases for nonepidemic months during 1956 and the usual seasonal variation in officially reported cases, a rate of 91 per 1,000 per year was calculated, a value close to observed rates in Finland, especially if a greater than usual winter incidence that year is taken into account.

In all instances, the rates cited are no more than an approximation of actual conditions for reasons inherent in recall data. In Alaska, for example, observed prevalence, clinic attendance for active diarrhea, and other facts led to an estimated annual rate somewhat more than six times that obtained by history of past illness. Survey rates are believed to express with fair reliability the frequency of more severe infections; accurate morbidity from these diseases would require consecutive semi-monthly observations throughout a year.

Age Specific Incidence—Except in Greenland, children aged 0-4 years had the highest rates for acute diarrheal disease, Table 1, with frequency declining regularly in Norway and Finland with advancing age. Rates among adults in Alaska were relatively great, and in Greenland diarrhea among the older age groups exceeded that for school children. Observed prevalence by age suggests that diarrheal disease of older persons is underemphasized in statement of family illness in all areas, infection of children being more likely to be recalled than that of adults.

Incidence by Sex—No differences were found in the frequency of diarrheal disease by sex. Numbers of cases tended to be somewhat greater among females than males but not at a significant level. That histories were most commonly obtained from mothers is a likely bias.

Seasonal Variation—When studies began in Alaska, health officials and others were of the opinion that the spring thaw or breakup signaled an epidemic of enteric disease. However, most tundra villages are nearly empty at this time, the population dispersed for the annual muskrat hunt. Only as the people return to the villages some weeks later is a seasonal increase of diarrhea manifest, building up slowly through the summer.

In Finland, surveys of essentially the same population gave a winter incidence

Table 1—Acute Diarrheal Disease in Arctic Alaska, Finland, Norway, and Greenland as Determined by Field Survey, Summer and Late Summer of Specified Years; Cases of the Preceding Year and Incidence per 1,000 Population per Year, by Age

Age	Alaska (1954)			Finland (1956)			Norway (1956)			Greenland (1957)		
	Number Surveyed	Cases	Incidence per/1,000 per Year	Number Surveyed	Cases	Incidence per/1,000 per Year	Number Surveyed	Cases	Incidence per/1,000 per Year	Number Surveyed	Cases	Incidence per/1,000 per Year
0–4	93	35	376	213	50	235	131	38	290	427	240	562
5–14	124	37	218	309	48	155	207	50	241	542	211	389
15–44	153	17	111	387	28	72	479	89	186	824	543	659
45 and over	50	7	140	152	13	85	363	52	143	281	188	669
Unknown	0	0	0	9	0	0	1	0	0	17	2	118
	—	—	—	—	—	—	—	—	—	—	—	—
Total	420	86	205	1,070	139	130	1,181	229	194	2,091	1,184	566

of 92 cases per 1,000 population for the month immediately preceding the interview, and correspondingly a frequency of 80 in the following summer. The winter of 1956 was unusual; the high incidence determined by survey was in agreement with exceptionally high rates for officially reported cases.[21] In other years, reported rates are regularly at a low level in winter and highest in July and August. Our intent in Finland to measure swings in incidence between winter and summer was thus dissipated, but proof did follow that winter on occasion can provide as much diarrheal disease as summer. Indications of a secondary winter peak were also observed by Fournelle, et al.,[23] in subarctic Alaskan field studies of 1955, and some of the highest rates for reported cases in arctic Greenland are in February, March, and April.[24] A seasonal pattern of highest rates in summer and lowest in winter holds generally, but is subject to exception in all parts of the arctic. This is not surprising in the crowded and poorly sanitated environment of tundra communities; it occurs even in Finland.

Prevalence

At the time of population surveys, summer prevalence rates from direct observation of patients during the survey gave rates of 14 per 1,000 in Greenland, 12 in Alaska, nine in Finland, and eight in Norway. Based on the assumption of a three-four day illness, calculated summer incidence rates for Greenland would be about 1,450 per 1,000 per year and for Norway about 830.

Endemic Diarrheal Disease in the Arctic

The etiologic nature of acute diarrheal disease clearly is not to be learned by family interview, nor from officially notified cases because most are reported

as gastroenteritis without clinical or bacteriological differentiation. Clinical descriptions and stool specimens from sporadic cases, obtained through the courtesy of local physicians, and cases observed during field survey provided material to determine the prevailing kinds of acute intestinal disease.

Certain villages in the subarctic Kuskokwim delta of Alaska have a long-standing seeding with typhoid fever; the disease also has been recognized repeatedly in arctic Alaska. Paratyphoid fever is reported from time to time. No cases of either disease were encountered in this experience. Shigellosis was the prevailing endemic problem.

Bacteriological examination of 326 cases of acute diarrheal disease in Finland revealed a bacterial pathogen in 6 per cent. The 11 shigellae were of sonne type; salmonella infection included one case of typhoid fever and seven of paratyphoid fever B. Neither shigellosis nor salmonellosis was noted among clinical cases of the Norwegian survey.

In Greenland, paratyphoid fever B was encountered once among 29 sporadic clinical cases but no shigellosis, although carriers of both were identified. Paratyphoid fever A was not seen in any arctic community, nor was clinical salmonellosis of animal origin, although again carriers of S. typhimurium and others were found in Alaska. Of whatever etiology, clinical disease was regularly mild and of short duration.

Epidemic Diarrhea of the Arctic

Community outbreaks provide further information on the kinds of prevailing infection. A small outbreak of eight cases of paratyphoid fever B occurred over a three-week period in 1957 among 45 Danish construction workers in Disko Bay, and an epidemic of 66 cases the same summer in Sarqaq, among an unrelated island population of 220 Greenlanders. The larger outbreak began with scattered cases in April and centered in June and July; S. paratyphi B was isolated on four occasions.

Bacillary dysentery in 1955 involved nine persons in an Alaskan settlement of 48 Eskimos, with cases over a three-week period. Significantly some of them were due to Sh. flexneri 2a and others to Sh. flexneri 3. A Greenland epidemic originating in February, 1956, reached a peak in July, ended in October and numbered 155 cases in a population of 222 with no deaths. The disease was clinically bacillary dysentery but in the absence of laboratory facilities was not confirmed bacteriologically. An outstanding epidemic in Sukkertoppen, Greenland, established as bacillary dysentery, Flexner type 1a, began in December, 1954, continued through 1955, and ended in autumn of 1956; 365 cases with two deaths were reported in a population of 2,197. Epidemic bacillary dysentery did not occur in arctic Norway or Finland during these observations although sporadic cases were identified in Finland.

Two outbreaks of food poisoning were observed, one in an Alaskan camp in October and another in a boarding school in Finland at Christmastime. Clinically and epidemiologically both were staphylococcal, although neither was confirmed bacteriologically.

Two similar outbreaks of unusual nature were encountered, one in Finland, the other in Norway. The Finnish episode involved 25 of 70 persons resident in a small village and the surrounding countryside. The incubation period was two to three days, the clinical course short, and the epidemic lasted about two weeks. The Norwegian epidemic[22] started in June, extended through August, and spread by continuity up the long, narrow Malselv Valley. There were 188 cases with no deaths in a surveyed population of

1,181. Clinical characteristics were vomiting, cramps, slight fever, two to six loose stools, and a duration of two to three days. All ages were involved; spread was within families and from family to family. Repeated examination of feces from current and recent cases revealed no known bacterial pathogens. The recent demonstration in Scandinavia[25,26] of the presence of ECHO and Coxsackie viruses lends some support to the supposition then held that these outbreaks were of viral origin; the necessary studies were not within the facilities of the field laboratory.

Carrier Rates

The results of carrier surveys, Table 2, give further information on the nature of acute intestinal disease in the arctic. Single stools were obtained at the time of the family interview. Since interview was by families, the distributions by age and sex are those of the general population. The greater exactness of serial examination of multiple specimens is appreciated but was not feasible by reason of the long distances, difficult travel and other limitations of field work in the arctic. Combined carrier rates for shigellae and salmonellae as determined in summer were highest in Alaska (40 per 1,000), appreciably less in Greenland (3.5 per 1,000), and no carriers were found in Norwegian or Finnish Lapland among 1,930 persons examined. Winter rates in Alaska for 244 persons were 16 per 1,000; and in Finland for 988 persons again zero. The frequency of carriers of shigella in Alaska is indicative of a relatively heavy seeding of the population, for duration of the carrier state is regularly short. It was essentially twice that for salmonellae, in accord with the relative number of observed clinical cases.

The Greenland pattern was reversed in that salmonella was more often demonstrated than shigella; all were S. paratyhi B. In the total experience, salmonellae common to animals and man were identified only in Alaskan populations.

The carrier rates parallel environmental conditions. The high rates of Alaska and Greenland are in populations concentrated in villages under crowded living conditions and poor environmental sanitation, with conditions poorer in arctic Alaska than in Greenland. The infrequency of carriers in Lapland fits with the general dispersal of the population in individual homesteads and a level of sanitation comparable with that of Minnesota or the Dakotas, where indeed the population is so largely of the same Scandinavian origin. The physical environmental permits a proper water supply and sewage disposal; by survey, 92 per cent of residents in Inari Finland have privies or indoor toilets.

Animal Reservoirs of Intestinal Infection of Man

A population of dogs approximating that of human beings and the close association of man and dog in Alaska and Greenland suggest these animals as possible reservoirs of human infection. Dogs have been demonstrated as carriers of salmonella.[27] The circumstance that dogs are the principal scavengers of human feces in those regions enhances the chance. The failure in this experience to identify in man salmonellosis attributable to strains of animal origin is against such occurrence. Clinical cases of salmonellosis in all three study areas were due either to S. typhosa or to S. paratyphi B, strains definitely adapted to man. Carriers of salmonellae common to animals and man were found only in Alaska, and they were rare, Table 2. However, contemporary studies[28] in Barrow, Alaska, showed 36 among 240 people and six

out of 86 dogs to be carriers of S. typhimurium.[29] No clinical infections of man were recognized.

Feces from 64 dogs in two Alaskan villages and from 109 dogs in six Greenland communities were examined bacteriologically but no carriers of salmonella were demonstrated. Human carriers of salmonellae in these villages were limited to S. paratyphi B. The evidence is thus against dogs as an important reservoir of salmonellosis in the arctic, at least under endemic conditions. They appear also to play a minor role with respect to human parasitic infection.

Parasitic Infections

While something is known of the kinds and less of the frequency of bacterial parasites in arctic populations, knowledge of intestinal helminths and protozoa is fragmentary. So far as the present studies extend, a high level of infection has been observed. Detailed findings by age, sex, and various environmental conditions will be reported separately, along with correlation of parasitic infection and clinical reaction.

In Alaska, examination of single fecal specimens demonstrated parasites in 62 of 227 people resident in the Kuskokwim delta. Fournelle, et al.,[30] enlarged these observations to show protozoa in 40 per cent and helminths in 12 per cent of 1,680 persons, also by single stool examinations. Diphyllobothrium sp. accounted for most of the helminths, with no ascarids observed and a single instance of hookworm. E. coli was the predominant protozoan, with E. histolytica in 1.5 per cent of specimens.

Rates were unusually high in Greenland, with 78 per cent of 274 persons thus far examined having parasites. Helminths and protozoa were in a proportion of one to six.

Attention in Finland was mainly to D. latum because of the recognized high prevalence of infection in southern Finland,[31] commonly as much as

Table 2—Carriers of Shigellae and Salmonellae and Rates per 1,000 Population in Arctic Areas, Summer and Late Summer Surveys, by Country, 1954–1957

		Shigella			Salmonella		
Place	Persons Examined	Type	Number of Carriers	Carriers per/1,000 Population	Type	Number of Carriers	Carriers per/1,000 Population
Alaska	325	Sh. flexneri 2a	4		S. typhosa	1	
		Sh. flexneri 3	1		S. typhimurium	1	
		Sh. flexneri unspecified	3		S. infantis	1	
		Sh. sonnei	1		S. oranienburg	1	
		Total	9	28	Total	4	12
Finland	879		0	–		0	–
Norway	1,051		0	–		0	–
Greenland	1,991	Sh. sonnei	3	1.5	S. paratyphi B	4	2

20 per cent. Presence of the disease in arctic Finland has been recognized by clinicians, but quantitative relations have not been determined. The present studies gave a prevalence of 4.4 per cent for Finnish Lapland from single stool examinations. No D. latum was observed in the Norwegian arctic, although E. histolytica was found in two of 1,051 people examined.

Mode of Transmission

The infectious agents thus far demonstrated in acute intestinal disease of the arctic are in no way unique. The variety is limited, but the strains isolated follow antigenic patterns familiar from other climatic zones. The arctic population appears neither more nor less susceptible than others under comparable conditions of exposure elsewhere in the world. The usual predominance of infection among younger children suggests preceding experience of adults. In some isolated communities distribution of disease is broadly through all ages and incidence is greater, indicative of first appearance of the agent. Environment, therefore, would appear the primary determining factor in frequency, and mode of transmission the important consideration in possibilities for prevention. The immediate attraction is to the physical environment, particularly the dominant feature of cold.

The freezing temperatures which hold for most of the year directly affect water supply and waste disposal. Permafrost exaggerates the difficulties in all of arctic Alaska, appreciably in other regions, and patchily even in Lapland. Water supply is from ponds and sloughs in Alaska, and from lakes and streams in Greenland. Snow and ice from these sources and from icebergs must be melted in winter. Because fuel is inordinately scarce, water becomes almost as precious a commodity as in the desert. Contamination is frequent, and the water available for household use is minimal, an element which in other circumstances has been shown to be a strong factor contributing to diarrheal disorders.[32] Subsurface disposal of feces and other wastes or disposition by dilution is limited in tundra communities. The dirt and disorder, the absence of privies, and the ubiquitous dogs led the Pittsburgh survey group in Alaska[33] to conclude that "a low prevalence (of diarrhea and dysentery) is simply incompatible with the primitive sanitation in the native communities." To an extent, cold may limit the viability of human pathogens, particularly protozoa. The main effect is on the way people live, with the social environment highly determinative of the frequency of intestinal illness. The short supply of fuel and a paucity of building material lead to small and overcrowded houses in the Eskimo villages of Alaska and Greenland. From five to 12 persons often live in one or two rooms, and in Greenland the whole family may share the same low sleeping shelf.

The contrast in the Scandinavian arctic is substantial: there are two-story dwellings, with the spaciousness of rural residences in America and the usual ground water supply and facilities for disposal of wastes. The Eskimo community is aggregated in villages, with houses commonly closely spaced. They range from towns, to outposts, to small settlements of a few families. The Lapland countryside, because of absence of permafrost and opportunity for agriculture, is typically characterized by individual homesteads, with small trading centers, but not with the village as the dominant place of abode. The Lapps themselves are primarily herdsmen of reindeer and seminomadic, but they constitute a small fraction of the total population of Lapland, about 31,000 among 750,000. The main population is Scandinavian with the habits,

the customs, and the social environment of the southern part of the country from which they came. Their culture is familiar to Americans who know the northern states of the middle west.

Despite village life in so much of the arctic, the family is the strong social unit. The small communities preclude common facilities for food, water, or public sanitation. Each family provides for itself. Occasional exceptions occur in respect to food; the meat of a whale or other large sea mammal ordinarily is distributed to the community. Such circumstances have given rise to outbreaks of trichinosis from walrus meat in Greenland,[34] and botulism[35] with several deaths, traced to seal flippers in Labrador. Such epidemics are unusual and account for a small part of all acute intestinal disease. How often food poisoning occurs as a family event is indeterminate. A common and sudden involvement of entire families is not unknown under conditions where an ordinary pathogen cannot be isolated. That food poisoning occurs under arctic conditions is proved by two outbreaks within this experience. The general sanitation of the environment suggests family events as probable, but as usual they are difficult to identify.

Numerous bacteriological examinations of water supplies showed contamination to be common. Cases of intestinal infection doubtless arise from this source, but water-borne epidemics are limited by a social environment wherein each family is responsible for its own water. Outbreaks in this experience do not follow a pattern of vehicle transmission. In two instances, one of dysentery and one of paratyphoid fever, special effort was made to relate water to the epidemic but with no solid or even suggestive association. Fresh milk is nonexistent in most of the arctic; the usual supply is evaporated milk.

Flies seemingly have a minor part in transmission of intestinal infection. The season for bluebottle flies is short although coinciding with the usual seasonal prevalence of enteric disease. So far as numbers are concerned, flies are inconsequential in comparison with mosquitoes which dominate existence for weeks, and yet mosquito-borne disease is unknown.

Contact spread finds repeated confirmation. Epidemics are not explosive as in common source origin. They build up slowly, and run a course of months. Although as much as 40 per cent of a village population ultimately may be involved, prevalence is never great. Spread is characteristically a series of family outbreaks with progressing infection commonly traceable to close acquaintances and related families. In the Oscarville, Alaska, outbreak two serological types of dysentery bacilli followed an independent course with little grouping of primary cases within families. The paratyphoid outbreak in Greenland involved construction workers in only two of five barracks, although all ate at a common mess; the eight cases were spread over 15 days, no two on a single day. The extensive Sukkertoppen epidemic of dysentery with 365 cases in a population of 2,197 spread by continuity over a period of 21 months; and the paratyphoid B epidemic in the island population at Sarqaq lasted six months to give 66 cases in a population of 222. The mild infection of undetermined etiology in Norway followed the same pattern in its course through the Malselv Valley. The high infection rates for intestinal parasites supply other evidence of contact infection. These conclusions are in agreement with those of earlier investigators, particularly Hrovl,[36] Krogh-Lund,[37] and Bertelsen[17] in Greenland. Bertelsen quotes Borresen's observations for bacilliary dysentery, that "feces is probably the common source of infection. Drinking water and food hardly play any role in this respect."

Relative Frequencies of Acute Intestinal Disorders

Various elements within the complex ordinarily reported as acute gastroenteritis have been identified in intestinal disease of the arctic. Quantitative relationships are less certain. Shigella and salmonella were isolated from less than 10 per cent of persons with sporadic acute diarrheal disease; this compares with 9 per cent in a recent series of 153 drawn from infants and children of an urban population in continental United States.[38] That study also demonstrated the presence of one or other of a variety of viruses in 44 per cent of patients; mixed infections of virus and bacteria added another 15 per cent. Two outstanding epidemics in the arctic yielded no common infectious agent, bacterial or parasitic. A viral component of the arctic gastroenteritis complex is suggestive and may well be appreciable.

A proportion of bacterial diarrhea is certainly due to food poisoning (intoxications). Two outbreaks were seen and epidemiological evidence suggests family occurrence as a likely and perhaps frequent event. Diarrhea of infants secondary to malnutrition and general infection is a recognized feature.[14] Intestinal parasites are present at a high level; analyses relating them to clinical disease have yet to be made.

Typhoid fever occurs in all areas, and more frequently than in temperate zones of a Western civilization. Paratyphoid fever B is endemic in arctic Greenland, commonly localized but occasionally epidemic. Paratyphoid A was not identified; salmonellosis of animal origin was not seen and carriers were rare.

Bacillary dysentery is endemic in arctic and subarctic Alaska with epidemic fluctuations a regular summer event. Extensive epidemics have been encountered in Greenland, but sporadic cases in the general population were relatively few. Sporadic infections occur in Lapland and epidemics have been noted in the past, particularly under military conditions.

The prevalence of parasitic infections was in accord with the general high level for gastroenteritis, and yet surprisingly great for a region where these conditions have had such little attention.

Summary

The incidence of acute intestinal disease among native populations of the arctic is high. Predominately European populations of the Scandinavian arctic have a frequency essentially that of contiguous temperate zones. The cold, the terrain, and the other physical features of the arctic environment act in determining the frequency of intestinal disease, primarily through influence on the human host rather than on infectious agent. In Lapland, the Gulf Stream modifies temperature, permits agriculture, attracts a people, and tends to a culture where intestinal infection is of minor consequence. In colder regions occupation is limited to hunting and fishing, food supply is restricted and crowding within primitive houses with poor environmental sanitation invites intestinal infection.

The results of this study and the experience of clinicians of the north strongly support contact spread as the significant mode of transmission. Rates of occurrence are determined mainly by the habits, customs, occupations and food sources of arctic populations, with these in turn a frequent reflection of the physical environment. Ultimate control depends primarily upon the slow processes of social reconstruction and economic development.

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Why individuals and groups accept or reject innovations is a basic question for public health workers. In recent years attention has been focused on this problem in connection with immunization against poliomyelitis. Here is a report on the characteristics of acceptors and rejectors in a large northeastern industrial community, which throws some light on the subject, and raises further questions.

FACTORS IN PARTICIPATION IN THE 1954 POLIOMYELITIS VACCINE FIELD TRIALS, ERIE COUNTY, NEW YORK

Warren Winkelstein, Jr., M.D., M.P.H., F.A.P.H.A., and Saxon Graham, Ph.D.

PERHAPS THE MOST important function of public health administration is the introduction and continued application of innovations designed to promote and preserve health. When these innovations are directly applicable to environmental health factors, for example, treatment of water supplies, results of their introduction become available to the whole population without the necessity for individual action. Other types of innovations do involve individual behavior; it is here that public health workers usually encounter complex problems in obtaining full acceptance and utilization by the population. For example, the success of the well-child conference, newly introduced into the community, depends on motivating individual mothers to use it. Since most public health innovations of the future will be of this type, it becomes important to enlarge understanding of the process of acceptance and rejection of health innovations. Identification of the characteristics of population groups which accept innovations as opposed to those which are more recalcitrant may be helpful to the public health worker in planning for the introduction of other health innovations.

A unique opportunity for such study occurred in the Poliomyelitis Vaccine Field Trial of 1954. The Field Trial was an innovation in the sense that persons were requested to participate in something new to their experience. It thus permitted an examination of the reaction of various segments of the population to a program of potential value and one which was vigorously promoted by public health workers.

There have been two previous studies of the characteristics of participants and nonparticipants in the Poliomyelitis Vaccine Field Trials.[1,2] Both of these studies have been based on interviews with samples of mothers of children eligible for participation. Clausen and colleagues interviewed 175 mothers of children in the second grade of five schools in a county in Virginia. Francis and coworkers reported on interviews with 1,102 mothers who comprised a probability sample of the populations in ten of the 11 states participating in the placebo control phase of the Field Trial.

In both of these studies, several characteristics of participators and nonparticipators were assessed on an individual basis. In the present study, an effort has been made to characterize participating and nonparticipating population groups according to some variables examined by previous investigators, and in addition, to some not hitherto studied. Findings are presented on the 54,435 children in school grades one, two, and three in Erie County, N. Y., in the spring of 1954. These comprised the total universe of children eligible for the Field Trial in Erie County.

Erie County, with a population of about one million, contains one of the nation's larger industrial communities, Buffalo. Grain storage, smelting, shipping, manufacture of chemicals, and automobile fabrication and assembly all hold important places in the economy. Although 87 per cent of the county's population is urban, dairy and truck farming activities are substantial. A county-wide health department was established in 1948, and by 1954 a comprehensive public health program had been extended to all parts of the county.

In the spring of 1954, the Erie County Health Department, at the suggestion of the National Foundation for Infantile Paralysis, made preparations to participate in the national field trials. For some years, a school immunization program had been in process; all the schools in the county, parochial and private, had participated in this program. In order to facilitate participation, a public relations program was undertaken, utilizing television, radio, printed materials, talks to Parent-Teachers Associations, and the like. No special efforts were directed toward any particular area of the county.

Methods

The characteristics of participators and nonparticipators studied are age, race, public or parochial school attendance, urban-suburban-rural residence, economic status, education of parents, ethnic background, and previous experience with poliomyelitis. Information on the first four variables is based directly on records available for each individual child. Information regarding economic status, education of parents, ethnic background, and previous poliomyelitis experience is not available for the individual but only for the census tract of residence of each child as based on data from the census of 1950. Our statements with regard to participation of various economic groups, for example, are based on participation in census tracts of differing economic status.

Of course such generalization is valid only to the extent to which characteristics of a given census tract are representative of traits of all persons living in them. Myers[3] has indicated that census tracts may be quite heterogeneous. On the other hand, usually the families comprising a given census tract are more similar to each other than to those in other tracts. The use of data and subjects from all census tracts, as in the present study, may minimize the effects of the heterogeneity to be found in a few of them. Nevertheless, the possibility of bias from this source exists in the present procedure. It should be noted, of course, that a comparison of 1954 participation with 1950 census data may detract slightly from the reliability of our findings. Some changes between 1950 and 1954 may have occurred to make comparisons invalid. However, recently Rosenfeld, Katz, and Donabedian[4] found that socioeconomic data obtained in survey interviews in Boston census tracts in 1957 closely correlated with those obtained by the census in 1950.

For convenience in presentation of data, some census tract information on economic status, measured by median monthly rental, is presented in the form of quartile data, with quartile I being of high status and quartile IV being low.

Table 1—Participation in Poliomyelitis Vaccine Field Trial According to Race, Census Tracts with One or More Nonwhites Eligible, Buffalo, N. Y., 1954

Census Tract	Whites			Nonwhites		
	Eligible* Number	Participated Number	Participated Per cent	Eligible* Number	Participated Number	Participated Per cent
Tracts with 20 or More Nonwhites						
C.T. 12	654	336	51.4	151	102	67.5
C.T. 13	211	116	55.0	124	82	66.1
C.T. 14	51	28	54.9	783	547	69.9
C.T. 15	354	190	53.7	472	265	56.1
C.T. 25	457	250	54.7	327	220	67.3
C.T. 26	188	124	66.0	95	59	62.1
C.T. 31	578	322	55.7	30	22	73.3
C.T. 32	427	241	56.4	459	274	59.7
C.T. 33	530	286	54.0	211	123	58.3
C.T. 56	330	138	41.8	21	15	71.4
C.T. 71	1,069	460	43.0	56	48	85.7
C.T. 72	322	169	52.3	93	84	90.3
Tracts with 1–19 Nonwhites	9,852	5,081	51.6	122	76	62.3
Total	15,023	7,741	51.5	2,949	1,917	65.1

* All children in grades 1, 2, and 3.

These quartiles are of roughly equal population. In the case of education, ethnic background, and a part of the economic data, results are presented for each tract.

Results

For Erie County the over-all participation in the Field Trial was 56.1 per cent, as compared to 55.0 per cent for all participating counties in New York State exclusive of New York City. In subsequent paragraphs the factors related to participation are described.

Race

Public health workers will be particularly interested in the participation in the Poliomyelitis Vaccine Field Trial of nonwhites as compared to whites. There is much evidence that nonwhites receive less medical care than whites. Nevertheless, in some cities child health conferences, immunization programs, and the like, frequently offering services gratis or at a nominal fee, serve a larger proportion of nonwhites than white population. Furthermore, studies done in Muscogee County, Ga.,[5] in Washington, D. C., and in Cleveland, Ohio,[6] showed greater participation by Negroes than whites in free, publicly sponsored health programs. One might therefore expect that nonwhites would be consistent in their behavior relative to free medical care offered them through public health departments and participate in the Field Trials in greater proportions than the whites.

Participation according to race for the city of Buffalo is presented in Table 1.

The analysis has included the census tracts in which one or more nonwhites were eligible to participate. Of the 12 census tracts with 20 or more nonwhite children eligible, all but one had a higher proportion of nonwhite participation than white. When the rest of the Buffalo tracts containing from one to 19 nonwhites were combined for analysis, it was again found that nonwhites participated more than whites. For all of the tracts containing nonwhites in Buffalo combined, 65.1 per cent of nonwhites participated as opposed to 51.5 per cent of whites. It should be observed that, in Buffalo, the term "nonwhite" can almost always be construed as Negro. It might be said that whites residing in census tracts with nonwhites could be of lower economic status than their nonwhite neighbors and that the observed differences in participation are a result of this factor. That this is not the case is suggested by the fact that whites in the highest economic quartile of Buffalo participated less than nonwhites. Thus, Table 3 shows that quartile I whites had a participation rate of 59.0 per cent, while Table 1 reveals that nonwhites had a rate of 65.1 per cent.

Because nonwhites clearly participated in larger proportions than did whites, and because they contributed only relatively small numbers to the eligible population, further analyses according to age, sex, ethnic background, and the like, to be discussed subsequently, will exclude them from consideration.

Age

Table 2 indicates that there is a decrease in participation among white children as age increases. Considering Erie County as a whole, 56.8 per cent of children age six participated as opposed to 53.1 per cent of those age nine and older. The tendency for participation to decrease with age was present in the major geographic areas considered separately: Buffalo, first-ring towns, and other towns. As shown in Table 3, when the participation by age group was examined according to economic quartile of census tract of residence within Buffalo, the tendency was not so clear. The trend of decreasing participation with increasing age was observed clearly in quartile I, but there was almost no difference among age groups in the other quartiles, and the differences that were observed were not consistently ordered in one direction or another. Clearly, the situation is more complex than the superficial relationship of age to participation would suggest.

Geographic Location

Table 2 indicates rather large variation in participation among various geographic areas in the county. Sociologi-

Table 2—Participation in Poliomyelitis Vaccine Field Trial by White Children According to Age, and Place of Residence, Erie County, N. Y., 1954

Age	Buffalo			First-Ring Towns			Other Towns			Erie County (Totals)		
	Eligible	Participated		Eligible	Participated		Eligible	Participated		Eligible	Participated	
	No.	No	Per cent	No.	No.	Per cent	No.	No.	Per cent	No.	No.	Per cent
6	6,621	3,397	51.3	4,336	2,700	62.2	2,599	1,599	61.5	13,556	7,696	56.8
7	8,888	4,695	52.8	5,884	3,616	61.4	3,834	2,397	62.5	18,606	10,708	57.5
8	6,667	3,332	50.0	4,084	2,381	58.3	2,784	1,699	61.0	13,535	7,412	54.8
9 and over	2,972	1,477	49.7	1,472	814	55.3	1,345	793	59.0	5,789	3,084	53.1
Total	25,148	12,901	51.3	15,776	9,511	60.3	10,562	6,488	61.4	51,486	28,900	56.1

Table 3—Participation in Poliomyelitis Vaccine Field Trials by White Children According to Age and Economic Quartile of Residence, Buffalo, N. Y., 1954

Age	Quartile I (High) Eligible No.	I (High) Participated No.	I (High) Participated Per cent	Quartile II Eligible No.	II Participated No.	II Participated Per cent	Quartile III Eligible No.	III Participated No.	III Participated Per cent	Quartile IV (Low) Eligible No.	IV (Low) Participated No.	IV (Low) Participated Per cent
6	1,535	928	60.5	1,808	977	54.0	1,659	779	47.0	1,619	713	44.0
7	2,175	1,311	60.3	2,471	1,367	55.3	2,113	1,062	50.3	2,131	955	44.8
8	1,652	958	58.0	1,803	944	52.4	1,598	748	46.8	1,614	682	42.3
9 and over	605	325	53.7	706	376	53.3	821	391	47.6	838	385	45.9
Total	5,967	3,522	59.0	6,788	3,664	54.0	6,191	2,980	48.1	6,202	2,735	44.1

cally, there are many factors which distinguish the central city from its immediate satellites and these from the rural and "exurban" areas located more remotely from the city. Such factors may later be found to explain the results observed here. The city of Buffalo had the lowest participation with 51.3 per cent. First-ring communities were next, with 60.3 per cent, and more remote areas were slightly higher with 61.4 per cent participating. These differences are reflected in breakdowns by age.

Considering each township separately, reference to Figure 1 indicates that all but one of the first-ring suburbs, Cheektowaga, had higher participation rates than the city of Buffalo. Similarly, all but two of the remote communities had higher participation rates than Buffalo. Figure 1 shows that the agricultural townships most distant from Buffalo—Eden, Colden, Boston, Collins, and Concord—had the highest participation rates recorded. We can conclude only that gross differences do exist among remote townships, suburbs, and the central city. It must be emphasized, too, that the exurban and suburban areas cannot be considered as homogeneous within themselves in participation. The first-ring communities have very low and very high records of participation, and the more remote communities have both the highest and lowest records in the county.

Economic Differences

The Francis report[2] showed that "participation rate increased steadily with increasing income." A similar finding is obtained among Buffalo census tracts as well as in first-ring communities. Table 3 indicates that participation declines fairly substantially from 59.0 per cent in quartile I to 54 per cent in quartile II, 48.1 per cent in quartile III, and reaches a low of 44.1 per cent in quartile IV. A regular gradient of decreasing participation is observed as economic status in Buffalo declines.

Table 4 shows the first-ring communities of Erie County arranged in order of decreasing economic status, as measured by median monthly rental. Amherst, Kenmore, and Tonawanda are well-to-do residential dormitory suburbs, while Cheektowaga and especially Lackawanna are industrial areas. It was found that while there is less participation in the suburbs of lower economic status than in the higher ones, the regular decline of participation noted in Buffalo is not present in the suburbs.

Education of Parents

Clausen,[1] studying a sample of mothers of second grade children in five Virginia

schools, found that about 80 per cent of the mothers of participants in the Field Trials had graduated from high school. About half of the total, indeed, had been to college. Only 27 per cent of the mothers of nonparticipants had been to college, and just a little over half of the total had a high school diploma. Participation in the Poliomyelitis Vaccine Field Trials appeared to increase with the education of the parents. Later, studying a sample of 328 mothers of school children in three communities in the Boston Metropolitan Area, Clausen[7] discovered similar relationships between education of mothers and the poliomyelitis immunization status of their children. The Francis report[2] discovered that "mothers of participants were more likely to have completed high school than mothers of nonparticipants." The present analysis reveals a trend which is similar, but more complex than heretofore reported.

Although we have no direct data on education of parents of children involved in the Field Trials, we do have information on the participation of children by census tract, and the census of 1950 provides us with data on median years of education of persons 25 years of age and older in the various Buffalo census tracts. In Table 5, it can be seen that 45.6 per cent of the children residing in census

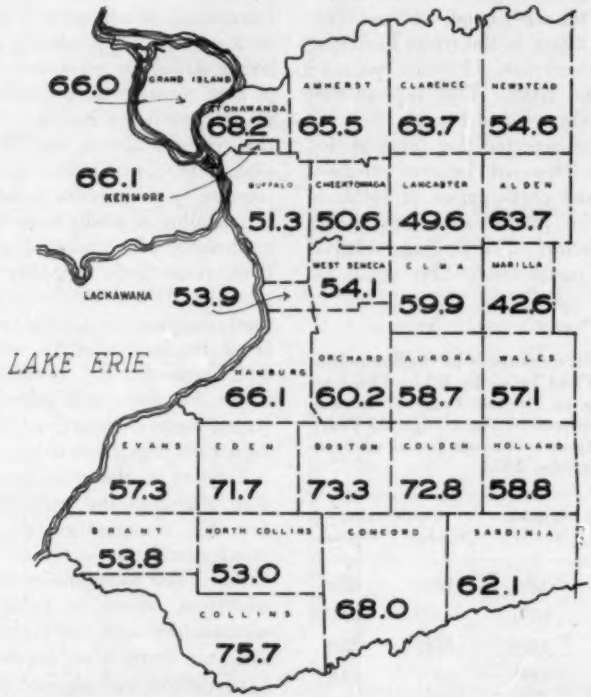

Figure 1—Per cent Participation of White Children in Poliomyelitis Vaccine Field Trials According to Community of Residence, Erie County, N. Y., 1954

Table 4—Participation in Poliomyelitis Vaccine Field Trial by White Children in First-Ring Towns According to Median Monthly Rental in the Towns, Erie County, 1954

Town	Median Monthly Rental	Eligible Number	Participated Number	Participated Per cent
Amherst	$75.65	3,047	2,015	65.5
Kenmore	49.76	1,106	731	66.1
Tonawanda	46.23	4,167	2,842	68.2
Grand Island	40.17	326	239	66.0
West Seneca	33.03	1,506	815	54.1
Cheektowaga	31.11	3,894	1,971	50.6
Lackawanna	29.54	1,667	898	53.9
Total		15,776	9,511	60.3

tracts having 8.0 to 8.9 median years of education participated in the Field Trials. On the other hand, 62.0 per cent of children living in the tracts having a median higher than 12 years participated in the trials. This reflects the findings of Clausen and Francis.[1,2]

It is to be expected that some of the relationship observed between median education and participation of children could be the product of other socioeconomic factors. The findings relative to median rental conceivably could be linked to and influence those regarding education. In an effort to discover the relationship of education to participation as it existed independently of socioeconomic status, the question was examined in each census tract comprising the economic quartiles of Buffalo. It was found that in quartiles I and II, examined separately, participation increases with increase in the median number of years of schooling of adults in each tract, with coefficients of correlation of 0.52 and 0.60, respectively (see Figure 2). In quartiles III and IV the relationship almost disappears. Coefficients of correlation in these quartiles were 0.33 and 0.32, respectively. (Probability statements for these and subsequently presented coefficients are not applicable to these total population data.)

Table 5—Participation in Poliomyelitis Vaccine Field Trials by White Children According to Median Years of Education Completed by Population 25 Years Old and Over in Census Tracts of Residence, Buffalo, 1954

Median Years of Education	Eligible Number	Participated Number	Participated Per cent
12 or more	2,895	1,797	62.0
11.0–11.9	1,391	809	58.2
10.0–10.9	3,616	2,016	55.8
9.0– 9.9	4,692	2,561	54.6
8.0– 8.9	12,554	5,718	45.6
Total	25,148	12,901	51.3

Turning to the relation between median education and participation in the first-ring communities, we observed a rough correlation in the direction found earlier. The communities with the most education, shown in Table 6, are the communities with the highest participation, but there is no regular decline of participation with decline in education. The finding here is reminiscent of that regarding median rental and participation in these communities.

Despite the consistency of these findings with those of Clausen and Francis and despite the fact that the relation of education and economic status was found both in Buffalo and the suburban communities, the importance of these factors should not be overemphasized. The partial correlation coefficient showing the relation of rental to participation, controlling on education, was small, at 0.06. Partial correlation of education and participation, holding rental constant, was larger, at 0.30. This suggests that still other factors are playing a major role in affecting participation. It should be noted that the partial correlation coefficient makes a statement regarding the relation of these factors in the total population. We have already noted that while in the lower two quartiles the relation was almost nonexistent, in the upper two, participation increased with education.

To our knowledge, no other research has been done on this subject aside from that of Clausen[1] and Francis.[2] Neither of these investigators reported on participation in terms of both education and socioeconomic status. Judging from the unusually large percentages of mothers with college training in Clausen's sample, we suggest that his sample popula-

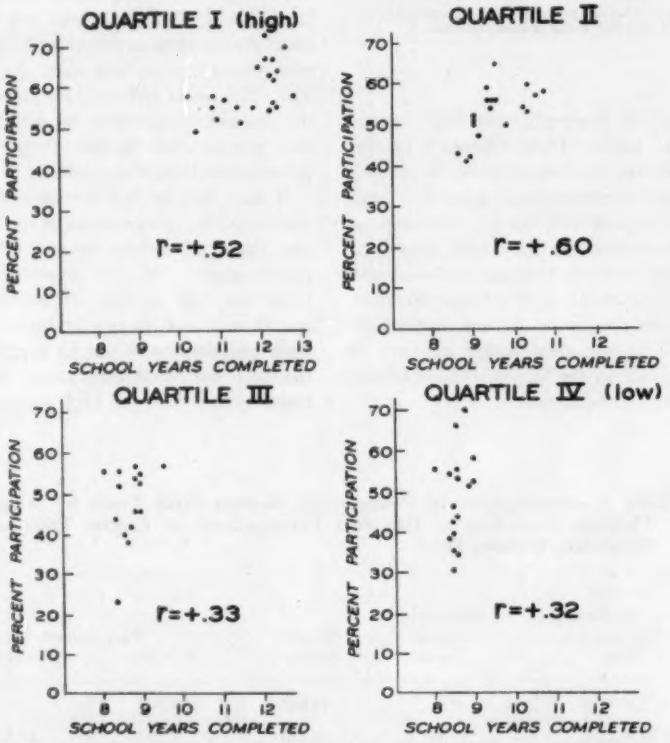

Figure 2—Participation in Poliomyelitis Vaccine Field Trials by White Children According to Median Years of Education Completed by the Population in Census Tracts of Residence Arranged into Four Economic Quartiles, Buffalo, N. Y., 1954

Table 6—Participation in Poliomyelitis Vaccine Field Trials by White Children in First-Ring Towns, According to Median Years of Education Completed in Each Town, Erie County, 1954

Town	Median Years Education Completed	Per cent Participating*
Kenmore	12.2	66.1
Grand Island	11.8	66.0
Amherst	11.2	65.5
Tonawanda	10.9	68.2
West Seneca	9.5	54.1
Cheektowaga	9.0	50.6
Lackawanna	8.8	53.9
Total		60.3

* The number of children eligible and participating for each of the first-ring towns is shown in Table 4.

tion was of comparatively high socioeconomic status. Thus, Clausen's results probably are more comparable to ours of the upper socioeconomic quartiles, and they perhaps should not be compared to our observations in the lower quartiles. We must conclude that participation appears to increase with education when socioeconomic status is not controlled. When it is, the relationship appears to hold mainly in the upper socioeconomic half of the population.

Ethnic Background

It could be hypothesized that because of lack of familiarity with American language, customs, and orientation toward medicine, parents of foreign extraction would be less likely to understand the request to have their children participate in the Field Trials and therefore would be less likely to grant permission. We have no data, of course, on the birthplace of parents of children in this study. Nevertheless, the census again provides us with material on the proportion of foreign-born persons in census tracts. It is possible therefore to make statements on the per cent of all children participating in a census tract as related to the proportion of foreign-born persons in the tract. In Table 7, Buffalo census tracts have been arranged in order according to per cent foreign-born, and then divided in half. The result indicates that tracts with the largest proportion of foreign-born had a somewhat smaller proportion of participants than the others.

It may well be that census tracts with above average proportions of immigrants are those of below average socioeconomic status. If this should be true, then the low degree of participation found in census tracts with large foreign-born populations would be a product of the low socioeconomic status of these tracts rather than the high proportion of

Table 7—Participation in Poliomyelitis Vaccine Field Trials by White Children According to Per cent Foreign-Born in Census Tract of Residence, Buffalo, 1954

Per cent Foreign-Born in Census Tract	Number of Census Tracts	Eligible Number	Participated Number	Participated Per cent
2.0–11.5	36	10,965	5,894	53.7
11.6–22.7	36	14,183	7,007	49.4
Total	72	25,148	12,901	51.3

foreign-born. Analysis of per cent participation and per cent foreign-born in each census tract in each socioeconomic quartile indicates that this is not necessarily the case. In quartiles II, III, and IV, each studied separately, it was found that there existed a trend toward decreasing participation with increasing proportion of foreign-born (see Figure 3). It is interesting, however, that this trend is reversed in the case of quartile I. Here is another instance of a complex relationship requiring further study.

Participation in Public and Parochial Schools

The practical usefulness of information as to differences in participation in public and parochial schools is obvious. The previous analysis regarding participation in census tracts of high and low foreign-born population would suggest that participation would be higher in public than in parochial schools since larger proportions of children of foreign-born persons are found in parochial institutions.

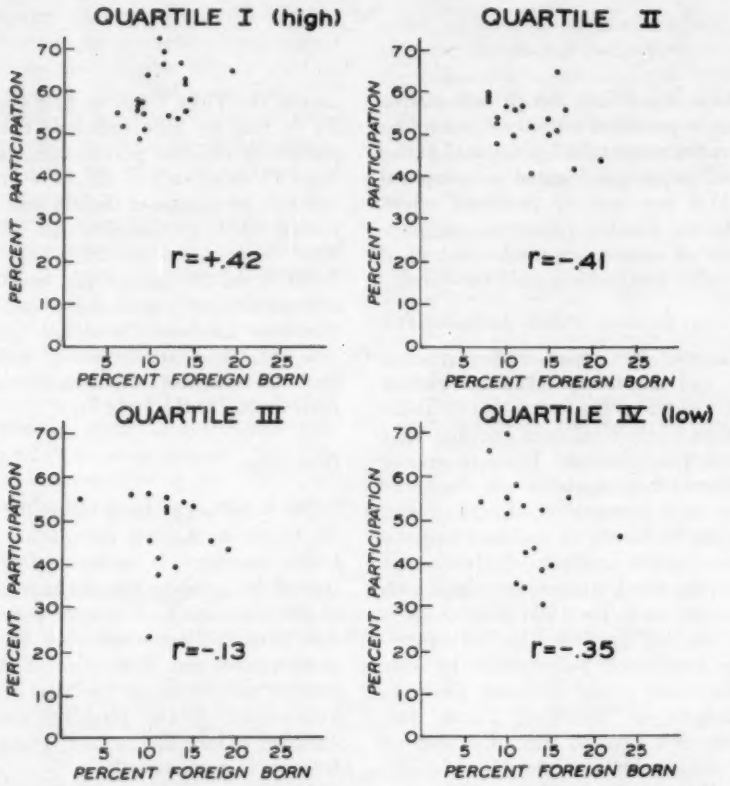

Figure 3—Participation in Poliomyelitis Vaccine Field Trials by White Children According to Recent Foreign-Born in Census Tract of Residence Arranged into Four Economic Quartiles, Buffalo, N. Y., 1954

Table 8—Participation in Poliomyelitis Vaccine Field Trials by White Children According to Whether They Attended Public or Parochial School, Buffalo, by Economic Quartiles, First-Ring Towns, and All Other Townships, 1954

Area	Public Schools			Parochial Schools		
	Eligible Number	Participated Number	Participated Per cent	Eligible Number	Participated Number	Participated Per cent
Buffalo Quartile I	3,767	2,331	61.9	2,200	1,191	54.1
II	3,961	2,207	55.7	2,827	1,457	51.5
III	3,660	1,780	48.6	2,531	1,199	47.4
IV	2,366	1,149	48.6	3,836	1,586	41.3
Buffalo Total	13,754	7,467	54.3	11,394	5,433	47.7
First-Ring Towns	10,443	6,482	62.1	5,333	3,029	56.8
Other Townships	8,168	5,050	61.8	2,391	1,438	60.0
Total Erie County	32,363	18,997	58.7	19,123	9,900	51.8

Table 8 indicates that participation is lower in parochial schools. Considering the entire county, 58.7 per cent of public school pupils participated as compared to 51.8 per cent of parochial school students. Similar differences are present in all economic quartiles and all of the major geographic areas of the county.

Previous Experience with Poliomyelitis

Clausen[7] has reported that mothers who had previously taken precautions with respect to the prevention of poliomyelitis in their children, enrolled their offspring in the Field Trials in greater numbers than mothers who had not taken such precautions. Francis found that the frequency of standard immunization against smallpox, diptheria, and whooping cough strongly correlated with participation in the Field Trials.[2] It is possible that families who have previously had much poliomyelitis in their communities would be more likely to participate in the Field Trials than others. We have no way of examining this directly, but we were able to investigate the extent to which variations in previous incidence of poliomyelitis in communities were related to participation in the Field Trials in Erie County. To do this, we have examined the proportion of children participating in the Field Trials in each of the 28 townships and villages outside of Buffalo, and have related this to poliomyelitis case rates in these communities for 1952-1953. In Table 9, the 28 communities have been ordered according to incidence and then combined arbitrarily into two groups. The data show a relationship between previous incidence of poliomyelitis and participation in the Field Trial.

Discussion

The principal problem facing the public health worker in introducing new health measures is understanding the reasons for group acceptance or rejection of the innovation. We have presented data revealing the association between participation and a number of demographic variables. On the basis of such information, future planning can be modified to take into account group differences in response.

A more comprehensive understanding of the processes would have been obtained had additional data on behavioral

traits of acceptors and rejectors been gathered. On the basis of sociological theory and findings, we could have hypothesized that acceptors would be more concerned with health, as evidenced by their previous behavior, that they have better records of immunization, child care, use of mass medical and nursing services, or perhaps, more experience with the disease in questions.[8] Such findings would be consistent with the observation reported here of increased participation where poliomyelitis had been recently epidemic. In addition, we need more information on the extent to which acceptance is a product of tendencies toward conformity with the decision of the group, be it neighborhood, friendship, religious, or other group. Two recent studies cite this relationship.[9,10] Further study might investigate the value of working to innovate among group leaders with the object of swaying the entire group.

Currently there is concern among public health workers with individual stated motivation for action. But exclusive preoccupation with stated motivations, phenomena which are difficult to measure in any rigorous fashion, may hinder progress in understanding the process of innovation. Such information, regarding motivation, can be useful only when gathered in a group context. An objection to immunization on the basis of potential danger may mean one thing in a group with a conspicuous record in the past for safeguarding its health, and quite another in a group which previously has shunned such concern. Group data such as presented in this paper are directly useful in introducing new public health measures. Furthermore, they are or easily could be available in the records of health departments for a number of different activities. The further analysis of the characteristics of acceptors and rejectors using such data may contribute much knowledge which could be useful in future innovation attempts.

Summary

An analysis of the characteristics of the participators and nonparticipators in the Poliomyelitis Vaccine Field Trials of 1954 in Erie County, N. Y., has been carried out. Data were available on each of the 54,435 children in grades one through three eligible to participate in the trials. It was found that:

1. Nonwhites participated more than whites.
2. Participation declined as age increased.
3. Children living in communities outside of Buffalo participated more than did children with residence in the central city.
4. Participation increased with increase in economic status as measured by median rental in Buffalo and first-ring suburbs.
5. There was a direct relationship between education of parents and participation in Buffalo. When this was examined for economic quartiles separately, the relationship all but disappeared in the lower half of the population.

Table 9—Participation in Poliomyelitis Vaccine Field Trials by White Children According to Poliomyelitis Attack Rates for Community of Residence in 1952 and 1953, Erie County, Except Buffalo, 1954

Poliomyelitis Cases per 10,000 Population	Number of Towns and Other Communities	Eligible Number	Participated	
			Number	Per cent
0 – 6.3	14	14,909	8,394	56.3
6.5–27.8	14	11,429	7,605	66.5
Total	28	26,338	15,999	60.7

6. There was an inverse relationship between percentage of foreign-born persons in Buffalo census tracts of the lower three economic quartiles and a direct relationship in the highest quartile.

7. Children attending parochial schools participated less than those attending public schools throughout the county.

8. In townships outside of Buffalo, there was a direct relationship between participation and incidence of poliomyelitis during the two preceding years.

These findings have been discussed and suggestions made for applying and extending this type of analysis to existing health department data in order to improve understanding of the factors involved in introducing public health innovations.

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The data for this survey were collected while Dr. Winkelstein was director, Division of Communicable Disease Control, Erie County (N. Y.) Health Department.

The use of homemaker services has been increasing slowly in recent years. From the viewpoint of the community and the family, the use of such services may be more economical and socially helpful than to use hospitals, nursing homes, or foster homes. The needs that require such services are surveyed in this article.

CHARACTERISTICS OF FAMILIES SERVED BY HOMEMAKERS

Maryland Y. Pennell, M.Sc., F.A.P.H.A., and Lucille M. Smith, F.A.P.H.A.

A HOMEMAKER is assigned by a community agency to help families with children, aged persons, or long-term patients. She assumes full or partial responsibility for child or adult care, for household management, and for simple nursing services of the kind that a family member would ordinarily perform.

During a one-week period in the first quarter of 1958 about 1,800 homemakers served nearly 2,200 families in 32 states and the District of Columbia. Information on the characteristics of these families is available from a nation-wide study of homemaker agencies conducted by the Public Health Service.

Types of Families

Among the families served by homemakers during the study week were 366 families with no sick nor aged persons at home and care was provided for well children. Actually seven out of ten of these families required the assignment of a homemaker because the children's mother was in a medical institution or dead. For example, a few months ago when Mr. F's wife was hospitalized with leukemia, he came to the homemaker agency for help in caring for his four small children. The children's grandmother who suffered from crippling arthritis had tried to take over while Mr. F was at work, but the burden of running the home and caring for the youngsters was too much for her. Mr. F, a laundryman, could not afford to hire help nor did he want to place the children in foster homes. A homemaker was sent to give day care to the youngsters during the period of Mrs. F's hospitalization, and now, after her death, the homemaker will continue to help until Mr. F can make permanent plans for his family.

Families with sick people or aged people who are helped by homemakers are of three types: families with children and sick persons, adult families with sick persons under age 65, and adult families with aged persons (65 years or older). These groups include the chronically ill or aged for whom community homemaker services can save dollars by keeping them at home instead of in institutions.

During the study week the homemakers served 901 families with children and sick persons at home. The usual situation was a sick mother unable to care for her children, but in some instances there were both sick children and sick parents in the household. For

Table 1—Types of Families Served by Homemakers During Study Week, by Type of Agency: Spring 1958

Type of Family*	All Agencies	Voluntary Family-Child Service Agencies	Voluntary Visiting Nurse Agencies	Other Voluntary Agencies†	Public Agencies
Number of agencies providing homemaker services‡	143	93	4	13	33
Number of families served by homemakers	2,188	1,145	129	265	649
Homemaker provided care for children:					
Families with well children, no sick nor aged	366	271	16	7	72
Families with children and sick persons§	901	553	62	52	234
Homemaker provided care for adult families:					
Adult families with sick persons, no aged	220	60	12	51	97
Adult families with aged persons¶	701	261	39	155	246
Per cent of families served by homemakers	100.0	100.0	100.0	100.0	100.0
Homemaker provided care for children:					
Families with well children, no sick nor aged	16.7	23.7	12.4	2.7	11.1
Families with children and sick persons	41.2	48.3	48.1	19.6	36.0
Homemaker provided care for adult families:					
Adult families with sick persons, no aged	10.1	5.2	9.3	19.2	15.0
Adult families with aged persons	32.0	22.8	30.2	58.5	37.9

* Includes family members at home; excludes persons in hospitals, institutions, or absent for other reasons. By definition, children are under 18 years of age, sick (ill or disabled) adults are in the age group 18–64 years, and aged persons (sick or well) are 65 years or older.

† Multiple service agencies and independent homemaker agencies.

‡ For list of agencies see PHS Pub. No. 596.

§ About 2 per cent of these families also have an aged person cared for by the homemaker.

¶ About 13 per cent of these families also have a sick person 18–64 years of age at home.

example, an agency homemaker was brought in to relieve Mrs. G of some of the burden of caring for her prematurely-born twin sons. Mrs. G had suffered a postnatal breakdown when she attempted too much in resuming her household tasks as well as the care of the twins and their older brother. For a time her aged mother had helped until the task overwhelmed her. Mr. G, a porter in a small hotel, was worried by the financial insecurity of his household. The homemaker agency assisted Mr. G in securing more remunerative work, thus easing the family strain. With help at home, Mrs. G was able to go to a clinic for psychotherapy.

Adult families with sick persons under age 65 and no aged persons constituted a tenth of the families provided homemaker services during the week. In these 220 families the patient was enabled to remain at home during convalescence or long-term or terminal illness. An example concerns Mrs. H, a 42-year-old woman who, three months after a cerebral accident, still could not use her left arm and leg or speak intelligibly. On her return from the hospital, the family had engaged a practical nurse and later substituted a housekeeper, but each proved too expensive. The family physician then suggested the resources of the Visiting Nurse Association to rehabilitate the patient. The visiting nurse found that the family, the practical nurse, and the housekeeper had all waited on the patient instead of having her help herself and try to speak. The physician ordered physical therapy and speech therapy. A home aide instructed by the professional staff members was assigned to assist Mrs. H practice at intervals throughout the day. In addition, the aide helped with the household chores until the patient could do them. Changes were made in the kitchen arrangements to make the work easier for the patient. The husband readily accepted his role in helping the patient help herself. Arrangements were made for Mrs. H to attend a class in speech therapy at the rehabilitation center. After four weeks of team work by the physician, nurse, therapists, and home aide an almost helpless person was able to resume the responsibility of her own home and was able to communicate by use of words instead of motions.

In 701 adult families the homemakers were assigned to care for aged persons. In each of these families there was at least one person age 65 or older who was ill or disabled. Ninety of these families had a younger sick adult at home in addition to the aged person. Almost half of the aged lived alone. For example, Miss J is a 76-year-old ex-cook who was referred following hospitalization for treatment of a fractured hip. She lives on her social security pension in her small mortgaged home. Although she was practically bedfast, she was determined to manage at home rather than go to the county institution. At first, homemaker services were provided morning and evening with the homemaker doing the shopping and giving Miss J a combined breakfast and lunch and an evening meal. Now Miss J is up on crutches part of the day and in a wheel chair part of the day. The homemaker comes for an hour daily, at a cost per month equivalent to two days of hospitalization. The service will continue until Miss J can take care of herself and it will be paid for by old-age assistance funds.

Types of Agencies

Homemaker services in the United States are provided by about 150 agencies.* These services recruit, train, supervise, and pay homemakers to help children, or aged, chronically ill, physically handicapped, and emotionally dis-

* See PHS Pub. No. 598[1] for a list of agencies providing homemaker services in the spring of 1958. Since then, a few new programs have been started.

turbed persons. This kind of aid was developed about 30 years ago primarily for the benefit of children whose mothers were ill or inadequate to take care of their needs. More recently, some organized services have stressed the benefits to the whole family on a long-time arrangement as well as for short periods during a crisis. Eight agencies relate their service solely to chronically ill or aged persons.

Slightly more than half of the families in the study (52 per cent) received homemaker services through voluntary family or family and children's service agencies. About 30 per cent of the families were served by homemakers employed by departments of public welfare, through child welfare, or public assistance programs. The balance of the families had homemakers assigned from independent voluntary homemaker agencies, visiting nurse associations,* or health service agencies (Table 1).

Only one governmental public health service agency is known to employ homemakers. In San Antonio, Tex., the City-County Tuberculosis Control Board has one homemaker to serve medically indigent tuberculosis patients.

In New Jersey, the situation is unique. Since 1952, the Division of Chronic Illness Control in the State Department of Health has had the responsibility for planning for the provision of adequate visiting nurse and housekeeping aid services "by appropriate public or private agencies throughout the state, to the end that the nursing and medical care being furnished the chronic sick in their own homes shall be improved in every manner possible."[2] The state commissioner of health annually appoints a State Consultant Committee on Community Homemaker Service, which is composed of lay and professional leaders from all parts of the state. A manual developed by this committee describes the steps essential in setting up a new homemaker service tailored to meet local needs.

The New Jersey State Department of Health also supports an orientation course for homemakers through a grant-in-aid contract with the Rutgers University Extension Division. This 16-hour course is conducted by home economists, nutritionists, public health nurses, and social workers. The quality of homemaker services is assured by the requirement that all homemakers complete this course.

Eight agencies† in New Jersey are autonomous and provide community homemaker services directed toward families with chronic illness. The first of these agencies was established in 1950, another in 1952, and the other six from 1954 on. These agencies provided homemaker services to 158 families during the study week. In these families, ill or disabled persons were enabled to remain at home, thus freeing hospital beds for persons acutely ill and decreasing the costs of unneeded institutional care. Well adult family members were freed for employment or other responsibilities. Children in these families were protected against the break-up of their homes, thereby lessening the demand for custodial facilities.

Other states might well follow the pattern of the New Jersey State Department of Health in accepting responsibility for assisting local governmental units and private agencies to improve their services and more nearly meet the needs of the chronically ill persons in their areas.

Money Spent for Homemaker Services

During 1957, more than 14,000 families in the United States had homemaker services, at an average expenditure of

* In Detroit, Mich.; Omaha, Neb.; Utica, N. Y.; and Dallas, Tex. The Visiting Nurse Association of New Canaan, Conn., started homemaker services after March, 1958.

† There are, in addition, two family service agencies with homemakers.

about $300 per family. Over four million dollars was spent for homemaker services when account is taken of administration, supervision, salaries, and transportation. Slightly more than half the funds were obtained from community chests and similar sources contributing to the budgets of the voluntary agencies. Another quarter of the funds were from the categorical public welfare programs. The remainder of the money was equally divided between family payments with funds other than public assistance and miscellaneous sources such as city or county general appropriations, trusts, and endowments.

Nearly all the families served were in the lower income group. Forty-three per cent received public assistance. Another 12 per cent were living on incomes of less than $50 per week. For large families this amount is hardly sufficient for maintenance without public assistance; half of these families had five or more persons at home.

A few families with net weekly incomes of $150 or more were provided with homemaker services during the study week. Some of these families were able to pay part or full cost of the homemaker's salary and transportation. Many agencies report that their policy is to assign homemakers to families irrespective of income, but in practice this is usually not possible because of the small number of homemakers available in each community. The value of this service to all income levels has been demonstrated, and it is hoped that, as more agencies are established and the numbers of homemakers increase, families of all income levels can have these services.

Length of Homemaker Assignment

The number of hours per week and the length of time that a homemaker serves the family are arranged to suit individual situations within the policy of the agency providing the service. Half of the families had service for at least three months; 4 per cent of the families had been served by a homemaker for five years or longer at the time of the study. At the other end of the scale, one-fourth of the families were new cases during the study week or had been served for less than two weeks.

Homemakers are often assigned to care for children for eight hours a day, five days a week. One-third of the families with children had about 40 hours of homemakers' time during the study week. Half of the families had less care than this. Resident or live-in service is infrequent since relatives, neighbors, and friends can usually be counted on to supplement the homemakers' hours and services if such arrangements are needed.

Homemakers are likely to be assigned to adult families for a full day once a week or a half day twice a week. One-third of the adult families had about eight hours of homemakers' time during the study week; about one-third of the families had fewer hours; and one-third had more time. Only a few adult families had as much as 40 hours of service per week.

Kinds of Services

The tasks carried out by the homemaker, of course, vary with the family situation. Where there are children or aged persons in the family, the homemaker nearly always gives them some personal care in addition to housekeeping.

The general housekeeping task for which the homemaker is nearly always responsible is cleaning the house in an effort to maintain as pleasant an environment as possible. Family laundry ranked second in the list of housekeeping tasks and was performed for nine out of ten families. Homemakers prepared and served meals to almost three-fourths of the families; they planned meals for half.

For about half of the families the

homemaker did the marketing and other simple errands. Adult families required shopping service by the homemakers to a greater extent than did families with children. Undoubtedly the father and older children took over this task wherever possible.

Other specific tasks performed by homemakers include leisure-time activities, such as reading aloud and playing games; teaching family members household skills; and accompanying family members to school or clinic. As would be expected, all these tasks were more often performed for families with children than for adult families.

In addition to these specific tasks, other activities listed as performed by homemakers include sewing, mending, shopping for household goods, budgeting, assisting the children with their school work, minding the children while the mother went to the clinic, and helping the family move. A few homemakers served as companions in listening to, advising, and cheering overburdened, inadequate, or lonely persons.

Services for Ill or Disabled Persons

Where the family has a sick person at home, some agencies encourage the homemaker to do many things for the patient in addition to what she does for the general care of the family. Some agencies, however, do not permit the homemaker to perform any services that involve direct contact with an ill or disabled individual. A little less than half of the 1,800 families with sick persons at home had any of the 16 services listed on the study questionnaire specifically for the care of sick persons.

The following kinds of services were most often reported as performed for families with ill or disabled persons:

Help the patient follow medical recommendations
Help the patient assume responsibility recommended by physician or nurse
Prepare and serve special food
Assist the patient with dressing
Take care of patient's teeth and hair

Other personal services less frequently performed by the homemaker include assistance in and out of bed, on and off the bedpan, and in and out of the bathtub; assistance with the bathing of bed patients; helping ill persons feed themselves; care of the patient's nails; giving the patient a back rub; taking his pulse or temperature; and giving him his medicine (other than an injection). Some of these services may be considered a nursing function. But homemakers, like members of the family, can be taught by a public health nurse to perform simple nursing services.

An important service which was provided occasionally was helping the patient use medical appliances and devices. When the mother is crippled from poliomyelitis, for example, the homemaker may help her learn to walk with braces. Or the homemaker may get the patient out of bed and encourage him to use his walker or crutches.

In a few families the homemaker helped the patient use household equipment geared to his disability. The homemaker may be instructed by the visiting nurse in the use of special kitchen equipment designed for patients in wheel chairs in order that she in turn may instruct the patient. The homemaker may also assist in the rearrangement of furnishings to make them more accessible to the convalescent mother resuming management of her home.

Professional Services

One-fourth of the families with ill or disabled persons at home were currently receiving professional nursing services. When such services were needed in the other three-fourths of the families, care would have to be given by the homemaker, family member, or some other person assisting in the home.

About one out of ten of these families was not receiving services from either a physician or a nurse, according to the survey respondents. Teamwork among physician, nurse, and caseworker is considered essential for planning good homemaker services. Is sufficient attention being given to the tenth of the families with ill or disabled persons not receiving medical or nursing care?

Description of Sick Persons at Home

The leading cause of illness or disability among all the persons in the study was diseases of the heart. Pregnancy, childbirth, and complications of the puerperium taken together was the second ranking cause. This was closely followed by diseases and conditions of the bones and organs of movement and by arthritis and rheumatism. Next in order were mental, psychoneurotic, and personality disorders; cancer; and diseases and conditions of the eyes, including blindness. These seven causes accounted for slightly more than half of the reported causes of illness or disability.

Among the children, the leading causes were mental deficiency and communicable diseases, which together are responsible for almost one-third of the cases. Adults in the age group from 18 to 64 years most often reported pregnancy and childbirth and the mental disorder group (15 and 10 per cent of all causes). Among aged persons heart disease was the leading cause, followed by arthritis and rheumatism (22 and 13 per cent of all causes).

In addition to causes of illness or disability, information from the study is available on ambulatory status, mental condition, and incontinence of sick family members at home. All these conditions are of concern to the homemaker providing care other than nursing.

Eight per cent of the patients were bedfast and 6 per cent were confined to a wheel chair. Thus one out of seven patients required considerable assistance from either the homemaker or another person in the household.

With regard to mental condition, one-fifth of the patients were confused part or all of the time. About 5 per cent of the sick persons were frequently incontinent; 6 per cent, occasionally so.

Among these families with ill or disabled persons at home, the major reason for the assignment of the homemaker was to provide long-term care to enable the patient to remain out of a hospital, nursing home, or other type of institution. About six out of ten families had long-term homemaker assignments. A few families had homemakers assigned to situations involving terminal illness.

Short-term homemaker services were provided to a third of the families. This type of assignment was more usual among families with children than among adult families. During or after confinement is a frequent reason for requesting homemaker services.

Conclusion

By now it is clear that homemaker services are usually made available because of the illness or disability of one or more family members. Instead of extended hospital, nursing home, or other institutional care for sick or aged persons and foster home placement for children, homemaker services may often be more economical and more successful from both the family and the community viewpoints.

The number of agencies providing homemaker services has been slowly increasing to about 150 at the present time. The number of homemakers currently employed is small, less than 2,000. Yet this is an occupation where there is no shortage of available personnel. Nearly every community has large numbers of women experienced in homemaking who could be trained in a few weeks.

Homemaker services will have to be

expanded if we are to meet the needs of adult families as well as families with children, at middle or high-income levels as well as at low-income levels. If even a small portion of our aging population —predicted to be 18 million persons in 1965—require homemaker services, new programs will have to be developed and supported.

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This paper was presented before a Joint Session of the Maternal and Child Health and Statistics Sections of the American Public Health Association at the Eighty-Sixth Annual Meeting in St. Louis, Mo., October 28, 1958.

Course on Food-Borne Diseases

A course in the epidemiology and control of food-borne diseases will be offered by the Communicable Disease Center, Public Health Service, at Denver, Colo., December 7-11, as a part of the continuing program of the center's Training Branch.

This course is designed for health officers, epidemiologists, food program administrators, and others who are concerned with planning and supervising public health activities in the control of food-borne diseases. "Emphasis will be placed on the measures necessary for the control of these diseases with particular reference to newer concepts in planning and implementing a food hygiene program. A look at contemporary food problems will also be taken."

Applications and further information from the Chief, Training Branch, Communicable Disease Center, Public Health Service, 50 Seventh St., N.E., Atlanta 23, Ga., or from the Public Health Service, Region VIII, First National Bank Building, Denver 2, Colo.

Arrangements whereby potential subscribers to a prepayment medical care plan are offered a choice between two types of plans is a recent development. How the Kaiser Foundation Health Plan functions in such a situation is presented in this paper.

DUAL CHOICE PROGRAMS

Avram Yedidia

THIS DISCUSSION OF dual choice programs is based on the experience of the Kaiser Foundation Health Plan in the San Francisco Bay Area Region of Northern California. The term "dual choice program" may be new to some readers of this paper. However, I believe the meaning of this term will become clear as I describe briefly the setting within which dual choice programs evolved.

Background

At the conclusion of World War II, the Kaiser Foundation Health Plan—a group practice prepayment plan—opened its membership rolls to groups and individuals in the community. Prior to that time the plan served employees of the shipyards operated by the Kaiser Companies and the families of the shipyard workers. As a group practice prepayment organization, this plan made comprehensive medical care available to its members in a manner substantially different from the traditional system of medical care (solo practice, fee-for-each-service) prevailing in our community. The group practice prepayment approach to medical care had to prove itself in the community on the basis of voluntary enrollment. Each person who joined the plan, either through group or through individual enrollment, did so as a result of his own decision—his own choice to become a member of the plan. The principle of voluntary enrollment was a basic concept in the community-wide development of the Kaiser Foundation Health Plan.

At that time, in the mid-forties, health insurance plans were composed predominantly of self-paying members. Each person decided for himself whether or not he wished to have his funds (dues or subscription charges) pooled with others in a prepayment plan. This arrangement involved three parties: the member, the provider of service (doctor, hospital), and the prepayment plan selected by the member. This setting lent itself readily to the Kaiser Foundation Health Plan's principle of voluntary enrollment and the membership in the plan grew substantially during that period.

With the advent of negotiated health and welfare funds late in the 1940's, and their rapid growth in the early 1950's, a fourth party was added to the prepaid medical care arrangement. This fourth party, the welfare fund, established large pools of funds for the purchase of prepaid medical care. Under this fourth party arrangement the pooling was no longer a result of the voluntary decision of each individual to contribute to the pool; rather, it was the

result of group decision and labor-management agreements.

The fourth party—the vehicle which creates the pooled funds—is most frequently a health and welfare fund. There are other types of fourth parties, including those created when participation in a pool is a condition of employment.

With such a pooled fund it was natural for the notion to arise that one and the same plan should be purchased for all the beneficiaries of the fund, irrespective of the desire of the individual beneficiaries. Obviously in communities where all the prepayment plans were the traditional solo practice, fee-for-each-service type of plan, the purchase by the fund of one and the same plan for all its members was to be expected. However, in the San Francisco Bay Area a direct service, group practice prepayment plan was available in addition to the traditional type of plan. It was, therefore, understandable that arrangements should be developed to apply pooled funds for the purchase of prepaid medical care in a manner to permit the individual beneficiaries a choice between the two types of prepayment plans. This is the meaning of the term dual choice—a program which provides beneficiaries of health and welfare funds a choice between a group practice prepayment plan, such as the Kaiser Foundation Health Plan, and a fee-for-each-service type of plan, such as Blue Cross, Blue Shield, or an insurance company. Through dual choice each beneficiary is permitted to select the kind of prepaid medical care arrangements he desires. In this way our plan has been able to maintain the principle of voluntary enrollment in fourth party arrangements.

Machinery of Dual Choice

An outline is given below of the mechanics of establishing dual choice programs. There can be wide variations in the methods employed. However, in the interest of brevity, the description will be limited to the types of arrangements which have proved to be feasible and practical in our experience.

1. The welfare fund trustees select the prepayment plans.
2. An equal amount of money per employee per month is spent for each of the plans.
3. Information describing the benefits of the two plans is made available to each of the beneficiaries.
4. The beneficiaries are permitted and encouraged to make up their own minds as to which plan they desire, without the intervention of solicitors from either plan, and without any steering from employer or union.
5. Each beneficiary is required to make an affirmative choice of plans.
6. The beneficiaries are given an opportunity annually to transfer from one plan to the other.
7. The prepayment plans in a dual choice program must agree in advance that they will accept the beneficiaries who select their plan whether the number be large or small, without percentage restrictions or other qualifications.

Occupational Groups with Dual Choice Programs

Dual choice programs have been instituted for groups representing a wide variety of industries and occupations. They include: longshoremen, office workers, culinary workers, carpenters, warehousemen, teachers, printers, retail clerks, county and municipal employees. Today, the Kaiser Foundation Health Plan membership in the San Francisco Bay Area Region of Northern California includes approximately 90,000 members who belong to our plan through groups with dual choice programs. This number is approximately 27 per cent of our total membership.

In the 53 groups having dual choice programs in our area, the alternate plans are provided by commercial insurance companies, by Blue Cross, or by Blue Shield. (In California, Blue Cross and Blue Shield are competing organizations.)

Proportion of Enrollment in Each Plan in Dual Choice Programs

There are wide variations among different groups in the proportion of members choosing each plan. In groups that start out with a dual choice program without first having belonged to a single plan, our experience indicates approximately equal enrollment in the two plans. On the other hand, when dual choice is introduced to a group which already belongs to a prepayment plan, the incumbent plan has the decided advantage.

Relatively few members shift from one plan to the other during the period provided annually for transfer. However, the direction of the shift is predominantly to our plan.

Utilization of Services in Dual Choice Programs

Recently, we reviewed the health plan hospital utilization rates for the year 1957 for dual choice groups with enrollments in the Kaiser Foundation Health Plan of more than 500 persons. Among the 18 groups in this category,* the range in utilization rates was wide—from 365 to 1,210 days of hospital care per 1,000 members per year.

As with our total health plan membership, hospital utilization in dual choice groups is directly related to age. Groups made up predominantly of young persons have low hospital utilization experience, and groups composed predominantly of older persons have high hospital utilization experience, as indicated in Table 1.

As a point of reference, for our total health plan membership the utilization rate in 1957 was 660 hospital days of care per 1,000 members and 71 per cent of our total membership was under 45 years of age.

The pattern of hospital utilization in these dual choice groups is associated with the age composition of workers and their families in the industries from which these groups derive. To use insurance language for a moment, the mechanism of dual choice does not appear to result in the "favorable risks" selecting one plan and the "unfavorable risks" selecting the other. Rather it appears that the composition of the total group determines for both plans whether hospital utilization is going to be relatively low, intermediate, or high.

Table 1 — Frequency Distribution of Specified† Dual Choice Groups by Hospital Utilization Rates, with Age Composition Indicator‡ Given for Each Level of Utilization

Hospital Days§ per 1,000 per Year	Number of Groups	Percent of Persons Under the Age of 45
300– 399	1	86
400– 499	4	77
500– 599	3	75
600– 699	4	65
700– 799	4	63
800– 899		
900– 999		
1,000–1,099	1	48
1,100–1,199		
1,200–1,299	1	31

† Groups specified in first paragraph of Section on Utilization of Services in Dual Choice Programs.

‡ Percentage of persons in the age group under 45 years is used as an indicator of the age composition of the total group.

§ Excludes days of hospital care for newborns.

* Excluded from this review of dual choice groups with membership in excess of 500 persons were:

(a) Groups which were not covered throughout 1957.

(b) Groups of employees in the Kaiser industries.

(c) Groups of employees of Kaiser Foundation Health Plan, Kaiser Foundation Hospitals, and the Permanente Medical Group.

(d) Groups covering subscribers only or dependents only.

(e) One large group with a significant portion of members (casuals) for whom birthdates were not available.

Table 2—Percentage Distribution by Age and Average Age of Employees in a Dual Choice Program, October, 1955

(Data for a large service industry in San Francisco. Separate segments of the industry have their own welfare fund, and are designated below as subgroups. Note: Dependents are not included in this Table.)

All Groups	Total		Subgroup A		Subgroup B		Subgroup C		Subgroup D	
	Kaiser	Alternate	Kaiser	Alternate	Kaiser	Alternate	Kaiser	Alternate	Kaiser	Alternate
	N=		N=		N=		N=		N=	
	(10,488)	(6,801)	(7,828)	(3,758)	(1,405)	(2,432)	(1,023)	(390)	(232)	(221)
All ages	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Under 45	45	43	48	51	41	35	26	26	28	22
45-54	27	30	27	29	30	33	27	29	31	29
55-64	19	20	18	16	21	24	30	28	25	31
65 and over	9	7	7	4	8	8	17	17	16	18
Average Age	47 yrs	47 yrs	46 yrs	45 yrs	48 yrs	49 yrs	53 yrs	53 yrs	52 yrs	53 yrs

This conclusion is based in part on data and in part on inference. The wide range in our hospital utilization experience among dual choice groups is somewhat inconsistent with the hypothesis that in dual choice the Kaiser Plan tends to attract the "favorable risks" to the detriment of the alternate plan; also, it argues against the hypothesis that we tend to attract the "unfavorable risks" to our own detriment. From our knowledge and impressions of the age composition of workers in the industries having dual choice programs, the age composition of the group which selects the Kaiser Plan is not unlike that of the total group. A case in point is a service industry group in our area. Table 2 gives the age distribution of employees in this group who selected the Kaiser Foundation Health Plan and comparable data for those who selected the alternate plan.

Direct comparisons of utilization experience under the alternate plan and under our plan are not available. Dual choice programs, by definition, include two prepayment plans each having a totally different approach to the method of providing medical care. The fee-for-each-service plan is concerned with the frequency of claims for the various categories of benefits, and the total dollar expenditure as it relates to income. The group practice prepayment plan, on the other hand, is concerned with developing and maintaining adequate staff and facilities to meet the medical care requirements of its membership. Establishing price tags for each service and keeping a "dollar score" for each group would be meaningless and wasteful in the framework of the Kaiser Foundation Health Plan. Comparisons of utilization under dual choice programs will, therefore, not become available unless special studies are undertaken which would either (1) attempt to price individual services provided to Kaiser Plan members in an effort to get the dollar paid-in, dollar paid-out type of information used by insurance plans, or (2) attempt, for the insurance plan, to obtain utilization statistics for comparison with our data.

Although direct comparisons of experience are not available, there are clues as to utilization in the alternate plan. These clues emerge from the prevailing pattern of rate-making, which is experience rating in all of the plans in

our area except the Kaiser Foundation Health Plan. From these clues, the same conclusion is drawn, i.e., in general, the age composition of the total group determines for both plans whether the experience, in terms of utilization, is relatively low, intermediate, or high.

A word of caution, however, should be mentioned here. Special circumstances in a group may produce substantially different types of enrollment in the two plans. For example, one of our large groups had a single fee-for-each-service plan for approximately ten years before dual choice was introduced. In this group the funds were to be used for medical care for the employee only. Each employee could voluntarily include his dependents by making the necessary monthly contribution. The benefits for dependents were very limited and the monthly contributions were very high. As a result, very few employees—particularly among the younger ones with large families—covered their dependents. When the Kaiser Foundation Health Plan was made available on a dual choice basis, many of these younger employees with large families joined our plan in order to cover their dependents. Thus, special circumstances within a group can produce effects which would favor one plan or the other from a "risk" standpoint.

Summary

This is a brief and, to some extent, oversimplified description of the manner in which a group practice direct service prepayment plan in the San Francisco Bay Area, in cooperation with membership groups in the community, met the challenge of changing conditions in the prepayment field. With the emergence of health and welfare funds, a dynamic and potent fourth party was added in the arrangements for prepaid medical and hospital services. The development of dual choice programs permitted the Kaiser Foundation Health Plan to continue its growth in this new setting without departing from its policy of voluntary enrollment.

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This paper was presented before a Joint Session of the Dental Health, Medical Care, and Public Health Nursing Sections of the American Public Health Association at the Eighty-Sixth Annual Meeting in St. Louis, Mo., October 29, 1958.

What is the significance of adenovirus infections for children? For adults? How important are these infections for military personnel? A perspective on these and other questions is provided by this review of data obtained over the past four years.

NEWER ASPECTS OF ADENOVIRUS INFECTIONS

Harold S. Ginsberg, M.D.

FOUR YEARS ago at a combined meeting of the Epidemiology and Laboratory Sections of the American Public Health Association, there was a discussion of recent data pertaining to a newly isolated group of viruses, alluded to then by a variety of names, but now called adenoviruses.[1] The papers presented centered about means for classification of the newly discovered viruses, the diseases which they probably cause, and their possible importance as etiologic agents of acute respiratory infections.[2-4]

The intervening years have allowed time for many investigators to gather data which bear upon the points discussed with uncertainty at that time and to permit a perspective to be gained on the role of the adenoviruses as agents of disease. This paper will attempt to review some of the pertinent information obtained in the past four years and to interpret these data relative to what we may term the natural history of adenovirus infections.

Classification

The adenovirus group at present consists of 23 immunologically distinct types, 18 of human origin, and five from animal sources.[5] That the ranks of this group will grow, as have the number of types of pneumococci and streptococci or even the ECHO viruses, seems probable. A common soluble antigen possessed by each of the 23 serological types and demonstrated most readily by complement-fixation technics is the essential property of a virus for membership in the adenovirus group.[1,5,6] The specific serological type is determined most accurately by neutralization titration in tissue culture. It has been demonstrated, however, that typing can be accomplished by complement-fixation technics employing type-specific hyperimmune rabbit sera.[7,8]

In addition to the adenoviruses which infect human beings, five distinct types have been isolated from monkeys.[5] The finding that horses and cows possess in their sera adenovirus-neutralizing substances (perhaps antibodies) suggests the possibility that these animals may also be hosts to adenoviruses or related agents.

Role in Disease

Since the initial isolation of the agents now known as adenoviruses by Rowe, et al,[10] and by Hilleman and Werner,[11] numerous studies have more clearly de-

fined the role of these viruses in the production of disease. The major clinical entities caused by these agents and the serological type, or types, of virus most frequently responsible for the infection are summarized in Table 1. Type 3 is the causative agent of nonbacterial pharyngitis, pharyngoconjunctival fever, or conjunctivitis without associated pharyngitis.[4,12-15] Type 7, commonly, but not as frequently as Type 3 virus, may cause pharyngitis or conjunctivitis.[15-17] Types 4 and 7 are the predominant etiologic agents responsible for acute respiratory disease of military recruits (ARD).[11,16,18,19] Type 8 virus has now become established as the virus etiologically responsible for epidemic keratoconjunctivitis.[20,21] This is not to say that other types are not associated with, and probably etiologic agents of, the diseases listed. Indeed, Types 1, 2, and 5 have been associated with sporadic cases of nonbacterial pharyngitis and even conjunctivitis relatively frequently.[4,22,23] Type 7 has occasionally been isolated from patients with pharyngoconjunctival fever,[24] and Types 6 and 10 in some instances from individuals with conjunctivitis.[17,23] Type 14 has been reported to be the causative agent of one epidemic of ARD in army recruits in the Netherlands,[25] and a few cases may be due to Type 3.

These data indicate that Types 3, 4, 7, and 8 are the prevalent epidemic adenoviruses, whereas, Types 1, 2, 5, 6, and the higher types induce only sporadic cases of disease or are responsible for inapparent infections. It must be pointed out that these conclusions are based upon results of studies done with young adults and children of whom relatively few were less than three years of age. Studies which describe the age at which type-specific neutralizing antibodies first appear,[2,26,27] and those carried out by Bell and his co-workers in an attempt to identify all respiratory infections in an institution for infant orphans[23] suggest that Types 1 and 2 in particular cause infections in a majority of children less than three years of age and may indeed be responsible for epidemics of febrile disease in these children.

Table 1—Adenoviruses Most Commonly Responsible for Disease

Disease Syndrome	Adenovirus Type
Nonbacterial pharyngitis	3;7
Pharyngoconjunctival fever	3
Conjunctivitis	3;7
ARD	4;7
Epidemic keratoconjunctivitis	8

It is clear, however, that the majority of detectable epidemics of acute respiratory diseases are caused by adenoviruses Types 3, 4, and 7. One might seek to answer the question, "Why are these agents the types which instigate epidemics rather than Types 1, 2, 5, 6, etc.?" A study of the antibody status of the population may shed some light on this question.

It is most profitable to examine this evidence by separating children from adults. Data obtained by groups in Washington, D. C.,[2] and Cleveland, Ohio,[26,27] are summarized in Table 2. An approximate representation of the percentage of the population demonstrated to have neutralizing antibodies is shown for each Type, 1 to 7. Antibodies measured at a 1:8 dilution yield results which are more easily interpreted. From other data obtained in our laboratory, it is apparent that neutralization by a 1:4 or smaller dilution of serum could be accomplished by heterotypic antibodies or perhaps by nonspecific neutralizing substances in serum.

These data indicate that antibodies for Types 1 and 2 viruses occur early in life. Antibodies against the other types occur

Table 2—Relative Occurrence of Type-Specific Adenovirus Antibodies in Children and Adults

Type-Specific Antibody*	Relative Incidence in Children	Adults
1	++	++
2	++	++
3	±	+
4	0	±
5	±	++
6	±	±
7	±	+

* Determined at 1:8 serum dilution.

0 = No antibodies
± = 1–20%
+ = 20–49%
++ = 50% or greater

in 20 per cent or less of the children. Type 5 virus antibodies appear in almost 60 per cent of adults, but Types 3, 4, 6, and 7 appear in a much smaller proportion. This evidence might offer an explanation why Types 1 and 2, and even perhaps Type 5, adenoviruses do not cause epidemics of disease, but it does not suggest a suitable postulate to explain the failure of Type 6 to induce more infections. Whether these epidemiologic differences of various types can be attributed to virulence of agents, capacity to spread from host to host, or other biologic characteristics cannot be stated as yet.

It may be deduced from the epidemiologic and clinical evidence that the first seven types of adenoviruses can be divided into two groups on the basis of their role in the production of disease. One subgroup consists of Types 3, 4, and 7, the major etiologic agents of disease. The second subgroup is composed of Types 1, 2, 5, and 6, viruses which have not been associated with epidemics, although they may produce sporadic illness. However, the agents of the latter subgroup, particularly Types 1 and 2, induce a large number of infections, as evidenced by the number of persons with type-specific antibodies. The actual number of clinical illnesses produced, however, is not clear.

It is intriguing that investigation of the biologic characteristics of adenoviruses Types 1-7 resulted in a division of the agents into the same two subgroups. As summarized in Table 3, this classification is based upon: (1) characteristics of the initial cycle of multiplication,[28,29] (2) the quantitative relationship between infectious viral particles and type-specific antibody in the neutralization reaction,[29,30] (3) the cytologic alterations induced in infected HeLa cells,[29,31,32] and (4) the agents isolated by culture of fragments of extirpated tonsils and adenoids.[2,33-35]

It would be a huge extrapolation, and one not yet warranted, to imply that the biologic characteristics described are responsible for the clinical and epidemiological behavior of the adenoviruses under discussion. It should only be pointed out that their division into the same two

Table 3—Grouping of Adenoviruses Types 1–7 on the Basis of Biological Properties

Viral Characteristic	Types 1, 2, 5, 6	Types 3, 4, 7
Eclipse period of multiplication cycle	17 hours	14–15 hours
Slope of neutralization line	2	1
Nuclear changes*:		
(1) Early eosinophilic inclusions	+	±†
(2) Feulgen + crystal-like bodies	0‡	+
(3) Rosette form	0	+
Isolated from tonsils and adenoids	+	0

* As observed in tissue culture infected cells; chiefly HeLa cells.
† Observed in cells infected with Type 7 virus but less often than with Types 1, 2, 5 or 6.
‡ Rarely seen.

subgroups on the basis of such widely divergent types of evidence seems somewhat more than coincidental. Although the biologic characteristics thus far studied do not serve as a satisfactory basis to explain the clinical and epidemiological differences between viruses, other viral properties not yet understood may furnish the mechanism by which these differences are produced.

One cannot discuss the role of adenoviruses in the production of disease without discussing briefly the incidence of infection by these agents. This must be done in two categories: civilian and military. The evidence from a number of laboratories in this country and abroad indicates clearly that in civilian populations only between 1.5 and 4.0 per cent of acute viral respiratory diseases are caused by any of the adenoviruses.[26,36-40] In sharp contrast, adenoviruses are of extreme importance in military groups. This pertains, however, to recruits, a large majority of whom become infected within eight weeks after induction during fall or winter. The incidence of infection in the seasoned troops is not greatly different from a similar age group in the civilian population.[3,41]

The reasons for the marked differences between civilian and military populations both as to actual incidence and the infecting types involved are stll not understood. The confinement of Type 4 infections almost entirely to militarily clothed adults remains a major epidemiological mystery. Whatever the reason for the differences, it seems agreed by most investigators that artificial immunization with adenovirus vaccines is highly desirable in recruits in the military services. It is similarly agreed by most, however, that these immunization procedures, even if 100 per cent effective, would not reduce acute respiratory disease in civilians to a degree which could be detectable. Thus, in civilians, even in children two to three years of age, such preventive measures would be economically wasteful, and perhaps harmful in relation to widespread acceptability of other more necessary vaccines.

Natural History

The material presented on the role of adenoviruses in the causation of acute respiratory infections and the incidence of infection in various age groups can probably best be summarized by an attempt to construct a picture of the natural history of adenovirus infections.

During the first three years of life a large proportion of children have their initial exposure to adenoviruses. Types 1 and 2 are most commonly responsible for these early infections, although occasionally Type 3 or 5 may be the invader. It is not certain, however, how many of these initial infections are actually associated with illness—this point must be clarified. As a result of this primary infection, virus can persist for periods of years in tonsils, adenoids, and perhaps other lymphoid tissues. This "chronic viral infection" appears to be the result of parasitism of only a rare cell. It is tempting to speculate that this persistent, or latent infection is responsible for recurrent respiratory disease. Efforts to demonstrate that adenoviruses can cause recurrent disease in a manner similar to herpes simplex virus, however, have been unsuccessful to date.

Although Type 3 adenovirus infects the very young occasionally, it effects its greatest morbidity in children from 4 to 15. In civilian populations Type 3 virus is most frequently responsible for epidemics as well as demonstrable sporadic adenovirus disease. Following the primary Type 3 infection, antibodies apparently persist and immunity results. This agent has not been demonstrated to induce prolonged infection of tonsils and adenoids. Types 5, 2, 1, and 7, in order of decreasing frequency, may also cause disease in this age group.

In adults, adenoviruses have real significance only for the Armed Forces. In this selected population, it is the recruits who are seriously afflicted. Types 4 and 7 are the chief culprits and it is in this restricted population that the majority of primary infections with these types occurs. The primary infection is followed by lasting immunity; recurrent disease has not been demonstrable. It should be emphasized again that Type 4 is the agent of least importance to civilians, children and adults alike. The reason for this extremely high degree of selectivity by a virus whose biologic characteristics are so similar to the other adenoviruses remains a major mystery whose solution may shed light upon the general problems of the epidemiology and pathogenesis of viral infections.

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New Index Service

The National Library of Medicine will publish a monthly "Index Medicus" starting January, 1960, replacing its "Current List of Medical Literature." Subscriptions to the new index will be available through the Superintendent of Documents, Government Printing Office, Washington, D. C. The AMA will publish annual volumes of the library's new index as "Cumulated Index Medicus." Both publications will replace AMA's "Quarterly Cumulative Index Medicus."

Studies of malignancies in animals have been carried out to gain information of possible use in human cancer. The work of Eddy and Stewart on the polyoma virus raises basic questions in this area and is a matter of great interest for public health workers. The two papers that follow give a good view of the developments so far.

CHARACTERISTICS OF THE SE POLYOMA VIRUS

Bernice E. Eddy, Ph.D., F.A.P.H.A., and Sarah E. Stewart, M.D., Ph.D.

Source of the Virus

THE PURPOSE OF THIS PAPER is to present in some detail information derived from our studies on the characteristics of the SE polyoma virus. The virus was obtained from AKR mice from three sources: from a mouse with spontaneous leukemia from the Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Me.; from a mouse with spontaneous leukemia from Dr. L. Laws' colony, National Cancer Institute, Bethesda, Md.; and from a mouse with transplanted leukemia from Dr. L. Gross' Laboratory, Veterans Hospital, Bronx, N. Y.

Propagation of the Virus

The first isolations of the virus were made by inoculating monkey kidney cell cultures that had grown out in sheets with either minced enlarged lymph glands, liver, and spleen or extracts of these tissues. The tissue extracts were prepared by grinding the weighed tissues with alundum, diluting with Earle's balanced salt solution[1] to make a 10 per cent suspension, and centrifuging to remove the sediment. The tissue cultures were nourished with synthetic medium 199[2] containing 1 per cent heated calf serum and incubated at 35°-36° C. The nutrient fluids were changed at weekly intervals. Fluids removed after one, two, and often three weeks' incubation were transferred to new cell cultures or used to inject newborn $(C_3H \text{ f } X \text{ AKR})F_1$ hybrid mice. When it was learned that fluids from one-week old cultures rarely induced tumors in newborn mice, these fluids were discarded and only fluid from cultures incubated for two weeks or longer was used to transfer to new cell cultures or to inject into animals.[3,4] Virus was recovered from mice with parotid gland or other tumors in the same way. The tumor tissue was minced or ground and an extract prepared.

Since uninoculated control monkey kidney cell cultures kept for two or three weeks often degenerated, monkey kidney cultures were not ideal for propagating the SE polyoma virus. Swiss mouse embryo cell cultures were prepared and these not only supported growth of the virus better than monkey kidney cell cultures,[3] but the cultures could be maintained for long periods of time.[5] The method of preparing cultures has been modified from time to time. Some lots of calf serum con-

tained inhibitors, so rabbit serum and later horse serum was substituted. At present, cell growth is initiated with 2 per cent inactivated calf serum in synthetic medium and maintained in 2 per cent inactivated horse serum in synthetic medium.

Mouse embryo cell cultures contain many kinds of cells, some of which appear to grow well and others that do not. The dark degenerated appearing cells may be eliminated by preparing cell cultures in 32-ounce bottles, allowing a sheet of cells to develop and retrypsinizing. The retrypsinized cells are suspended in medium containing 5 per cent inactivated calf serum and dispensed in 2-ounce prescription bottles or tubes. Clear uniform cells develop that soon cover the glass surface. Such retrypsinized mouse embryo cells are now the choice cultures for propagating the SE polyoma virus.

Chorioallantoic membrane cell cultures from 10- or 11-day-old developing chick embryos also supported growth of the virus[6] and work currently in progress indicates that the virus multiplies in mouse kidney, mouse heart, and mouse thymus cultures.

Cytopathogenicity and Hemagglutination

In early experiments virus infected tissue cultures appeared to be identical with control uninoculated cultures when examined under a low-power lens of the microscope. Occasionally, but not regularly, patches of small dark cells were noted in the virus infected cultures. As the virus was transferred from tissue culture to tissue culture, and particularly after mouse embryo cell cultures were substituted for monkey kidney cell cultures, and after maintenance medium containing rabbit or horse serum rather than calf serum was used, cytopathogenic changes were seen regularly.[7] In most cultures the changes in the cells occurred slowly, progressing as the cells became older. Cytopathogenic changes have been noted as early as four days and as late as 21 days.

More recently variation in the amount of sodium bicarbonate in the medium has been shown to have a striking effect on cytopathogenicity[5] and on propagation of the virus. This is shown in Table 1. When a low concentration

Table 1—Virus Content of Fluids from Cell Cultures of the SE Polyoma Virus Nourished with Medium Containing Different Amounts of Sodium Bicarbonate as Measured by Cytopathogenicity and Hemagglutination

5 Per cent Sodium Bicarbonate/ 100 ml of Medium*	Cytopathogenic Titers† at: 7 days	14 days	Hemagglutinating Titers
0.5 ml	1.0‡	2.0	<1:10
1.0 ml	2.0	4.7	<1:10
2.0 ml	3.6	5.3	1:20
2.5 ml	4.5	5.5	1:80
3.5 ml	4.6	5.6	1:80

* Control cultures without virus but with different amounts of sodium bicarbonate in the medium showed no degenerative changes.
† Four roller tubes cell cultures were used for each tenfold virus dilution and the medium on the roller tube cultures contained 2.5 ml of 5 per cent sodium bicarbonate per 100 ml of medium.
‡ Reciprocal of negative log 10.

of sodium bicarbonate (0.5 ml of 5 per cent sodium bicarbonate per 100 ml of medium) was present little virus was present in the tissue culture fluids and cytopathogenic changes were not pronounced. The same virus inoculum on the same cells but nourished with medium containing a higher concentration (1.0-3.5 ml of 5 per cent sodium bicarbonate per 100 ml of medium) gave rise to increasing cytopathogenic changes and higher concentrations of virus.

The virus has the property of causing hemagglutination of guinea pig, hamster, or human O erythrocytes in the cold.[8] Both cytopathogenicity and hemagglutination are useful tools for studies on the SE polyoma virus. Table 1 illustrates how the two tests have been used to titrate virus propagated in cell cultures with varying amounts of sodium bicarbonate in the maintenance medium.

Infectivity of the SE Polyoma Virus in Animals

Newborn mice,[3] hamsters,[4] and rats[9] when injected with the virus subcutaneously react by the development of malignant neoplasms that in time kill the animals. Almost all mice develop parotid gland tumors and in addition tumors in other tissues. Twenty-six histologically different tumors have been observed. The virus induces multiple sarcomas and angiomatous lesions in the hamster and the commonest sites are the wall of the heart, liver, lungs, kidneys, and subcutaneous tissues. The most common tumors induced in the rat are sarcomas of the kidneys and subcutaneous tissues.

Unlike these rodents, newborn rabbits injected with the virus developed nonmalignant multiple subcutaneous nodules at 13-64 days of age and these nodules regressed when the rabbits were 93-134 days old. Virus has been isolated in tissue cultures from a nodule excised from a rabbit 56 days old. This virus injected into newborn rabbits again induced multiple subcutaneous nodules. Newborn hamsters injected with virus recovered from the rabbit developed malignant neoplasms in the heart and liver.

Routes of Injection of the SE Polyoma Virus

Tumors are routinely induced in animals by the introduction of virus subcutaneously in newborn animals. Work in progress indicates that tumors are induced in hamsters when virus is given either subcutaneously, intramuscularly, intraperitoneally, or intracerebrally. The dose of virus given intracerebrally was 0.03 ml as compared to 0.2 ml doses by other routes; yet many of the animals developed tumors in about the same period of time. The route was less satisfactory for tests for tumor induction than other routes because some animals died and no tumors could be detected macroscopically.

Passage of the SE Polyoma Virus Through Animals and Tissue Cultures

The SE polyoma virus has been passed from animal to animal and from one species to another with tissue culture passage between each animal passage as shown in Table 2. All of the animals injected with the tissue culture-grown virus developed tumors with the exception of the two dwarfed mice that had received the virus at birth. These were sacrificed and the parotid glands, liver, and spleen were minced and used to inoculate mouse embryo cell cultures. Virus was recovered from the remaining animals by inoculation of cell cultures either with minced tumor tissue or with an extract of ground tumor tissue. In the case of the rat, the kidney tumor and normal appearing spleen were minced and then used to

inoculate mouse embryo cell cultures.

The virus after 39 consecutive passages in mouse embryo cell culture was still capable of inducing tumors in hamsters, whether given subcutaneously, intramuscularly, intraperitoneally, or intracerebrally.

Effect of Dilution on Propagation of the Virus

In transferring 2 ml of the undiluted tissue culture-grown virus to succeeding tissue cultures in two-ounce bottles and testing all fluids harvested after a two-week period for hemagglutination, it was noted that the virus titers became progressively lower. Plaques propagated from such low titered virus diluted and grown under an agar overlay and then recultured in mouse embryo cell cultures with fluid medium gave higher hemagglutination titers. Later it was determined that an agar overlay was unnecessary; if the virus was diluted when transferred to new cell cultures the hemagglutinating titers remained high. At present, virus pools are prepared by diluting the virus used as the inoculum 10^{-3} or 10^{-4}. Cytopathogenicity does not appear as quickly, but the eventual titers are higher whether measured by cytopathic changes or by hemagglutination. This phenomenon is not an exclusive characteristic of the SE polyoma virus. Cantell[11] has reported that dilution of the mumps virus for transfer has a similar effect and the advantage of diluting throat washings from influenza patients for the recovery of the influenza virus has been known[12] for a number of years.

Table 2—Animal Passage of the SE Polyoma Virus with Passage in Tissue Cultures Between Successive Animal Passages

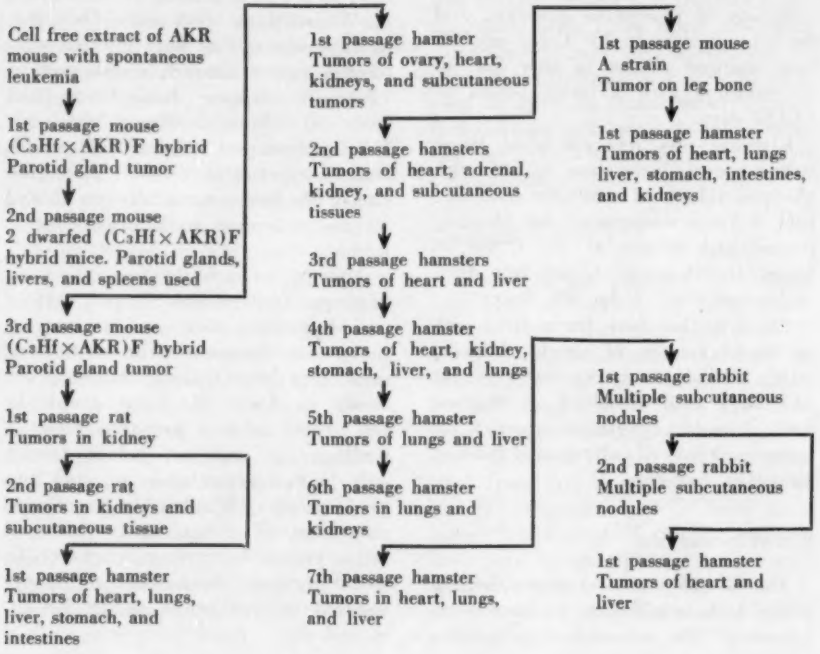
Cell free extract of AKR mouse with spontaneous leukemia
1st passage mouse (C3Hf × AKR)F hybrid Parotid gland tumor
2nd passage mouse 2 dwarfed (C3Hf × AKR)F hybrid mice. Parotid glands, livers, and spleens used
3rd passage mouse (C3Hf × AKR)F hybrid Parotid gland tumor
1st passage rat Tumors in kidney
2nd passage rat Tumors in kidneys and subcutaneous tissue
1st passage hamster Tumors of heart, lungs, liver, stomach, and intestines
1st passage hamster Tumors of ovary, heart, kidneys, and subcutaneous tumors
2nd passage hamsters Tumors of heart, adrenal, kidney, and subcutaneous tissues
3rd passage hamsters Tumors of heart and liver
4th passage hamster Tumors of heart, kidney, stomach, liver, and lungs
5th passage hamster Tumors of lungs and liver
6th passage hamster Tumors in lungs and kidneys
7th passage hamster Tumors in heart, lungs, and liver
1st passage mouse A strain Tumor on leg bone
1st passage hamster Tumors of heart, lungs liver, stomach, intestines, and kidneys
1st passage rabbit Multiple subcutaneous nodules
2nd passage rabbit Multiple subcutaneous nodules
1st passage hamster Tumors of heart and liver

Table 3—Tumors Induced in Hamsters by Virus Propagated in Monolayer Cell Cultures from Different Organs of the Mouse

Tissue Culture Source	Injected	Lost	With Tumors	Latency Period	Sites of Tumors	Surviving
Mouse embryo	4	1	3	18–21 days	3 liver, 2 heart, 2 lungs, 1 kidney	0
Mouse kidney	9	0	5	49 days	5 subcutaneous, 1 heart, 1 liver, 1 lung, 1 kidney 1 intenstine	3
Mouse heart	9	0	4	49–67 days	4 subcutaneous	5
Mouse thymus	10	2	8	28–44 days	5 heart, 3 lungs, 8 liver, 1 kidney, 1 intestine 1 ovary	0

Stability and Preservation

The virus is insensitive to many physical and chemical agents that destroy other microorganisms.[5,13] Heating to 60° C for 30 minutes did not affect the tumor-inducing capacity of the virus, 60° C for one hour delayed time of induction of tumors in hamsters, and the virus heating to 70° C for one-half hour induced tumors in only four of 19 hamsters with a latent period of 63-157 days.

Viability was retained when tissue culture-grown virus was mixed with an equal volume of anesthetic ether and held at room temperature for 14 days, treated with trypsin at 36° C for 18 hours, stored at 4° C for 169 days, or kept at −70° C for 404 days.

The virus has been freeze-dried with an equal volume of sterile skimmed milk. Dried virus cultures kept for 244 days then dissolved in tryptose broth caused cytopathic changes in mouse embryo cell cultures and induced tumors in hamsters.

Filtration and Size

The SE polyoma virus passes through filters, such as millipore, gradocol membranes of 120 millimicrons or greater pore size, and Seitz S3. The Seitz pads absorb much of the virus and induction of tumors in hamsters with Seitz filtrates was often delayed. No evidence has been obtained that any of the virus passes through a gradocol membrane of 43 mμ pore size and most of it was held back by membranes of 77 or 79 mμ pore size. Only two of 51 hamsters that were injected with filtrates passed through membranes of 77 or 79 mμ pore diameter or fluid from cell cultures incubated with such filtrates developed tumors.[5,7] These filtration experiments would place the size of the tumor virus between 26 and 39 mμ according to Elford's empiric formula.

Attempts to correlate the organ used to prepare cell cultures for propagating the SE polyoma virus and the sites of tumors in hamsters—The results of some experiments along this line are shown in Table 3. Virus grown in cell sheet cultures prepared from a single organ does not induce tumors only in that organ when injected into the hamster. Whether long-continued cultivation of the virus in cell cultures prepared from a single organ would increase the number of tumors induced in that organ cannot be answered yet.

One or More Viruses

No evidence has been obtained that more than one virus is responsible for the tumors described in different animals. The diluted virus produces plaques under an agar overlay that can be observed under a low-power lens. Virus from such a plaque when diluted again forms plaques.[5] Hamsters one to three days of age injected with virus recovered from a second plaque developed tumors in the same sites as before.

Virus subjected to treatment with heat, glycerol, or ether, stored at different temperatures or filtered through gradocol membranes of sizes that permitted virus to pass, all induced tumors in hamsters and mice in the same way. If two viruses were present their resistance to physical and chemical agents were the same.

Concentration

The virus has been concentrated by adsorption or elution on guinea pig erythrocytes, high-speed centrifugation, and precipitation by alcohol in the cold.[5]

Concentration by adsorption and elution on erythrocytes was accomplished by mixing 0.1 ml of 30 per cent washed guinea pig erythrocytes with 10 ml of cooled tissue culture grown virus and allowing the cells to settle at 4° C. The suspension was centrifuged at 4,000 rpm for 10 minutes, the supernatant fluid decanted, and the fluid replaced with a reduced volume of warm saline solution.

Centrifugation was carried out by adding normal rabbit serum to tissue culture-grown virus to make 1 per cent, distributing the mixture in stainless steel cups in 10 ml volumes, and centrifuging in a No. 40 rotor in a Spinco Model L centrifuge at 40,000 rpm (85,700-142,900 g) for three hours. The fluid was decanted and the sediment containing the virus was taken up in 1 ml of tryptose broth.

The virus was precipitated with alcohol by distributing tissue culture-grown virus containing 1 per cent rabbit serum in test tubes in 10 ml amounts, chilling to 0° to −5° C in a refrigerated methanol bath and adding 5 ml of chilled absolute ethyl alcohol. A precipitate soon formed. This precipitate which contained most of the virus was removed by centrifugation in a chilled angle centrifuge and taken up in 0.5 ml of tryptose broth (Difco).

Antigenicity

High titer humoral antibodies are elicited in mature guinea pigs or rabbits by inoculation of the animals with one dose of Freund's adjuvant mixed with tissue culture-grown virus followed by two or three doses of virus without adjuvant. Humoral antibodies are also found in the sera of mice or hamsters that develop tumors as a result of being inoculated with virus when newborn.[5]

Antibodies may be determined by serum-virus neutralization tests in hamsters or mice, in mouse embryo roller tube cultures, or by hemagglutination inhibition. Details have been given in other publications.[7,8,14-16]

Comment

Studies of malignancies in animals have been carried out by many investigators over a long period of time in order to gain information that may be of use in the problem of human cancers. Beard[17] states that: "There are no a priori reasons to suspect that the etiology of cancer in man differs in principal from that in animals." But can the SE polyoma virus be used as a model for studies of human cancer? Does man become infected with tumor viruses at a very early age or are such problematic viruses antigenic and highly resistant to physical and chemical

agents? The answers to these questions must await the future.

Summary

The SE polyoma virus recovered in tissue cultures from AKR mice from three sources has been propagated in monkey kidney, chick embryo, mouse embryo, mouse kidney, mouse thymus, and mouse heart cell cultures. It induces malignant neoplasms that eventually cause death in different strains of mice, hamsters, and rats. The same virus induces nonmalignant subcutaneous nodules in the rabbit that regress as the animal gets older. This virus that causes proliferation of cellular growth in vivo causes degenerative changes in monolayer mouse embryo cell cultures and the cytopathogenic effects have been utilized for titrating the virus and its antibody. The virus can be absorbed onto guinea pig, hamster, or human 0 erythrocytes in the cold-causing hemagglutination. Hemagglutination can also be used to titrate the virus and its antibody. Concentration methods that have been used for other viruses are effective for concentrating the SE polyoma virus. The virus is resistant to physical and chemical agents that destroy many viruses. Among these are heating to 60° C for an hour, treatment with ether at room temperature, the action of trypsin at 36° C for 18 hours, and storage at 4° C for 169 days.

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TUMOR INDUCTION BY SE POLYOMA VIRUS AND THE INHIBITION OF TUMORS BY SPECIFIC NEUTRALIZING ANTIBODIES

Sarah E. Stewart, Ph.D., M.D., and Bernice E. Eddy, Ph.D., F.A.P.H.A.

WE HAVE DESCRIBED a tumor-inducing virus, recoverable in tissue culture from certain mouse tumors, which was shown to maintain its oncogenic activity after many passages in tissue culture.[1-3] Mice, both randomly bred[2] and inbred strains,[4] Syrian hamsters,[3] rabbits,[5-6] and rats[7] were shown to be susceptible to tumor induction by this agent if the animals were inoculated within 24 hours of birth.

Tumor Induction

The virus was found to produce a wide spectrum of neoplasms in mice within two to 12 months. These ranged from a hyperplastic lesion of the epithelial cells of the kidney convoluted tubules to highly malignant metastasizing osteogenic sarcomas. Frequently a single mouse had as many as eight primary tumors of different types. Mice with neoplasms, except for an occasional animal, had pleomorphic tumors of the parotid glands. The types and frequency of tumors observed are shown in Table 1.

Although hamsters were more susceptible to the virus than the mice, as shown by a shorter latent period between the time of inoculation and the development of tumors, the neoplasms induced were chiefly sarcomas and angiomas. These lesions were generally widespread, involving many organs; each appeared to be a primary tumor and not the result of metastases.

The tumors observed in the rats were also sarcomas and angiomas, but they did not occur at numerous sites as in hamsters and developed more slowly.

Rabbits which received the virus developed multiple subcutaneous tumors which on histological examination closely resembled fibromas. In all the rabbits these lesions appeared in from 30 to 35 days. They ranged in size from a few to 30 millimeters in diameter and regressed after one to four months.

Virus Neutralization with Immune Serum

Polyoma virus injected into adult rabbits elicits antibodies which inhibit tumor induction if newborn animals are passively immunized with the serum. Serum given one hour or more after the virus, however, has little effect on tumor prevention.[5] The oncogenic effect of the virus is also prevented if it is mixed with the serum prior to injecting.

Virus neutralizing antibodies were also demonstrated in the following[5]:

1. Rabbits in which induced tumors had regressed and mice bearing parotid gland tumors.

2. Uninoculated mice kept in the virus environment.

3. Mice without tumors which were injected with control tissue culture material, but were housed in the same quarters as mice that received virus.

4. Personnel exposed to the virus over a long period of time.

Table 1—Frequency and Types of Tumors and Neoplastic Lesions Observed on Histological Examination of Mice Receiving Polyoma Virus

Subline number of polyoma virus	3,469	60	3,607
Number of mice with tumors examined histologically	136	120	59
Salivary gland tumors and other mucous gland tumors	130	115	59
Renal lesion	61	59	29
Mesothelioma	35	19	5
Thymoma	37	32	12
Mammary carcinomas in both males and females	41	24	9
S.C. sarcoma and hemangioendothelioma	33	13	4
Bone tumors	53	13	3
Kidney sarcoma	32	8	3
Epidermoid carcinoma of hair follicle	17	2	7
Thyroid tumor	8	7	1
Adrenal tumor	1	6	3
Leukemia	0	5	0
Buccal mucosa carcinoma	7	3	0
Lung carcinoma	3	3	0
Visceral hemangioma	2	3	0
Sweat gland tumor	1	0	0
Gastric carcinoma	1	2	0

Tumor induction by polyoma virus was not inhibited by the following[5]:

1. Sera from mice bearing mammary tumors induced by the Bittner milk agent.
2. Rabbit antiserum against Friend's leukemia virus.*
3. Rabbitt antiserum specific for Shope fibroma virus.

* Antisera received from Dr. Charlotte Friend, Sloan-Kettering Institute, New York, N. Y.

Vaccination

Since polyoma virus is highly antigenic the possibility of a vaccine for the prevention of tumor induction was investigated. In order to demonstrate active immunity it became necessary to use a host that would respond to tumor induction at an older age. It was found that except for an occasional animal mice more than 24 hours old were resistant to the oncogenic effects of the virus. Hamsters, however, as shown in Table 2, were found susceptible to tumor induction by the virus in the age range of one to 24 days.[8-9] Hamsters were therefore used for vaccination studies.[9]

Initial investigations with formalinized antigens were unsuccessful; three weeks' incubation at 37° C with 0.4 per cent formalin did not inactivate all the virus. Some of the hamsters inoculated with such preparations developed tumors. A vaccine was therefore prepared as follows: Freshly harvested tissue culture fluids containing live virus with hemagglutinating titers (HA) ranging from 160 to 2,560 were mixed with immune rabbit serum shown to inhibit virus hemagglutination at 1,280 dilutions[10] and to prevent tumor induction in mice.[11] Two parts of virus culture which had been diluted with an equal volume of control culture fluid were mixed with one part of the immune serum and incubated over night at 4° C. A 0.3 ml injection of the mixture given to two-day-old hamsters and repeated when the animals were eight days old protected 85 per cent of those which were challenged with live virus two weeks after the second vaccine injection. Eighty-nine per cent of control litter mates, which had been kept in an environment free of polyoma virus and received the same virus challenge, died with tumors within nine months.

Discussion and Summary

The immune response produced by polyoma virus is that observed for many of the usual type viruses. It is generally considered that tumor viruses are a group distinct from those that produce primarily inflammatory and necrotizing lesions or from the "classical" viruses. The following properties have been proposed as distinguishing characteristics of tumor viruses[12]: species, strain and cell specificity, dependence on age of the host for pathogenicity, and low antigenic activity. In contrast, other viruses (although some may show specificity for certain cells) will with few exceptions infect unrelated species and are usually good antigens. A property common to all viruses is that they induce varying degrees of cellular proliferation, of inflammatory changes and necrosis of the cells. Which of these will predominate with the tumor viruses may be determined by the state of virulence of the virus and by the state of susceptibility of the host. Duran-Reynals[13,14] has shown that certain typical tumor viruses injected into newborn animals did not induce neoplasms; for example, the Shope fibroma virus caused an acute inflammatory process in rabbits and the Rous virus a hemorrhagic disease in fowls.

We have found that the potency of polyoma virus may be increased by passage from tissue culture back into mice or hamsters with intervening culture of tumor material from the animal back into tissue culture.[15] The increased potency was made evident by a shortening of the latent period for tumor induction, dwarfism, and an acute inflammation of the eyes resulting in necrosis of the cornea. If made virulent enough by such passages, it is conceivable that such a virus would kill all the inoculated newborn animals without producing neoplastic lesions. Proliferation of cells may result only in animals that can elicit sufficient resistance to prevent the degenerative and necrotizing effects of the virus. Polyoma virus also behaves like the usual type virus in its lack of cell, strain, and species specificity; in its ability to produce hemagglutination of erythrocytes;[10] and to cause cytopathic changes in tissue culture.[16]

Because cancer viruses can be shown

Table 2—Location of Tumors in Hamsters Inoculated at Different Ages with Polyoma Virus

Age Inoc. (Day)	No. with Tumors Examined Histologically	Average Age at Death (Days)	Sarcomas			Vascular Lesions			Other Tumors
			Subcutaneous	Kidney	Mediastinal	Heart	Liver	Lungs	
1	13	78	13	3	2	5	2	2	1 adrenal cortical adenoma 1 ovarian carcinoma 5 sarcoma metastases to lung 1 sarcoma metastases to node
3	29	92	29	8	10	17	8	7	1 liver sarcoma 1 meningeal fibrosarcoma 1 stomach sarcoma 1 serosal fibroma urinary bladder
9	5	76	2	1	2	4	4	1	1 adrenal cortical adenoma 1 renal adenocarcinoma 1 subcutaneous fibro-lipoma
24	9	125	7	0	1	0	6	4	1 adrenal cortical adenoma 1 sarcoma metastases to lymph node 1 intravenous liver sarcoma 1 serosal fibroma of testes

to behave like other viruses it has been speculated that the opposite may also be true. Experiments have been designed by Duran-Reynals[17] which give some support to this hypothesis.

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Short-Term Technical Courses

The 1959-1960 Training Program Bulletin of the Robert A. Taft Sanitary Engineering Center, USPHS, is now available to those interested in the schedule of the center's short-term courses in water supply and pollution, radiological health, milk and food, and air pollution. Twenty-five of the courses in these various subjects are to be given between November 30, 1959, and June 18, 1960. The center is located at 4676 Columbia Parkway, Cincinnati 26, Ohio.

Who are the cigarette smokers among adolescents? What characterizes them? How can their habits be changed? The following study broaches these and other questions and endeavors to answer some of them.

CIGARETTE SMOKING AMONG HIGH SCHOOL STUDENTS

Daniel Horn, Ph.D., F.A.P.H.A.; Frederick A. Courts, Ph.D.; Robert M. Taylor, M.A.; and Erwin S. Solomon, M.A.

THE ACCUMULATION of scientific evidence implicating cigarette smoking as a health hazard, and particularly as the major cause of lung cancer, has led to an increased sense of responsibility among individuals and agencies concerned with public health to see that young people are made aware of these hazards before they have established smoking as a regular habit. The present study was undertaken by the staff of the American Cancer Society because it was felt that more information was needed about (1) the amount and patterning of smoking among school students, (2) the factors that distinguish smokers and nonsmokers in this group, (3) the motivations that are common in the taking up of smoking, and (4) the approaches that might be most effective in influencing smoking behavior.

A set of circumstances which included the availability of two local psychologists to conduct the field work and the cooperation of the local school system resulted in the choice of Portland, Ore., and some of the schools in the surrounding urbanized area as the locale of the study.

The basic design of the study was as follows:

1. An initial period of exploratory interviews and questionnaires, including projective technics, to develop appropriate questionnaires on smoking behavior and attitudes toward smoking, to select other questions that gave promise of relationship to the taking up of smoking, and to determine some of the factors that would be important in formulating an effective approach to presenting information on the hazards of smoking to this group. This phase took place largely in the period from May to September, 1958.

2. Administration of an unsigned questionnaire on smoking habits and background data to all the high school students in the 11 city (Portland) public high schools, five Catholic parochial high schools, and five high schools in Multnomah and Clackamas Counties outside the city limits but part of the urbanized area. This took place in October, 1958.

3. On the basis of the October questionnaire, 19 of the 21 schools were divided into six experimental groups ranging from two to four schools in number and matched as closely as possible for level of smoking.

4. One of the six experimental groups of schools served as a control and no special educational activities were undertaken during the course of the year that would not have taken place anyhow. The other five groups were reached three times during the course of the year with mass educational material (pamphlets, flyers, and posters) each group receiving

Table 1—Percentage Distribution of Cigarette Smoking Habits by School Grade and Sex, All Students

	Boys					Girls					
	Freshman	Sophomore	Junior	Senior	Total	Freshman	Sophomore	Junior	Senior	Total	Total
Never smoked	30.8	25.4	22.9	19.0	24.9	58.9	48.3	43.5	31.7	46.5	35.7
Experimented	41.6	36.5	32.8	33.4	36.3	32.3	35.9	33.2	33.6	33.9	35.1
Ex-occasional	2.2	1.9	1.7	1.8	1.9	0.7	0.6	0.9	1.2	0.8	1.4
Ex-regular	7.2	6.6	7.2	6.2	6.8	1.8	2.2	2.3	2.8	2.2	4.5
Current occasional	3.8	4.5	4.4	4.3	4.2	1.7	2.4	3.9	4.4	3.0	3.6
Current regular											
1– 6 per week	4.0	6.2	5.4	5.6	5.3	1.4	3.0	4.5	6.4	3.6	4.5
1– 4 per day	5.6	7.2	7.4	6.1	6.6	2.2	3.7	4.8	7.7	4.4	5.5
5– 9 per day	2.9	6.1	8.4	10.1	6.6	0.8	2.4	4.2	7.5	3.4	5.0
10–19 per day	1.1	4.2	6.6	9.4	5.0	0.2	0.8	1.8	3.7	1.5	3.2
20+ per day	0.9	1.5	3.2	4.3	2.3	0.1	0.6	0.9	1.0	0.6	1.5
No. of students	2,956	3,184	2,756	2,164	11,060	2,766	3,317	2,657	2,180	10,920	21,980
Per cent	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)
Percentage current regular	14.5	25.2	31.1	35.4	25.8	4.6	10.6	16.2	26.2	13.6	19.7

Table 1a—Percentage Distribution of Current Regular Cigarette Smokers by Amount Smoked, School Grade, and Sex, All Students

	Boys					Girls				
	Freshman	Sophomore	Junior	Senior	Total	Freshman	Sophomore	Junior	Senior	Total
1– 6 per week	27.3	24.5	17.5	15.8	20.5	29.7	28.8	27.7	24.3	26.8	22.7
1– 4 per day	38.7	28.7	23.7	17.1	25.6	46.9	35.3	29.8	29.4	32.4	27.9
5– 9 per day	20.3	24.3	27.1	28.5	25.7	16.4	22.5	26.0	28.5	25.3	25.6
10–19 per day	7.7	16.6	21.4	26.5	19.4	4.7	8.0	11.2	14.0	10.9	16.5
20+ per day	6.1	5.9	10.3	12.0	8.9	2.3	5.4	5.3	3.7	4.5	7.4
No. of students	429	801	856	765	2,851	128	351	430	571	1,480	4,331
Per cent	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)

one of the five following approaches:

a. Contemporary—Emphasis on those aspects of smoking having immediate or current meaning to the high school student.

b. Remote—Emphasis on the relationship of lung cancer to cigarette smoking in terms of effects in later life. Approaches (a) and (b) were included to test which was most effective in the light of the fact that interviews showed that contemporary effects of smoking are frequently reported as reasons for not smoking, but projective materials tend to show more underlying concern with the remote effects.

c. Both-Sided—Since some communication studies indicate that both-sided messages may be more effective than one-sided messages for those who are not committed to one side or the other, this approach was designed to be somewhat permissive with respect to smoking.

d. Authoritative—Since smoking is sometimes an act of rebellion against authority, this was included to test the appeals to authority which are common in most health education messages.

e. Adult Role-Taking—Since smoking may serve as a symbol of being "grown-up" this approach was designed to let the high school student reverse the usual parent-child role and assume the role of the person who provides information on health (i.e. the lung cancer-smoking relationship) to the parent or other adults in the family circle.

5. Near the end of May the questionnaire was again administered to all the students of the same high schools. The first portion of the questionnaire on smoking habits was identical with that used nearly eight months earlier. Some changes were made in the second portion as a result of the findings of the earlier questionnaire.

6. Two additional schools outside the Portland metropolitan area were used in an effort to determine what effect could be achieved with a more intensive personalized approach (as opposed to the mass communication approach in the other schools). In the course of this study, a 21-item Likert attitude scale and a five-item Guttman attitude scale were developed from a 45-item questionnaire based largely on responses to a sentence completion test given during the exploratory phase. The five-item Guttman atti-

Table 2—Percentage of Current Regular Cigarette Smokers by Parental Smoking Habits, All Students

	Boys								Girls								Standardized Percentages	
	Freshman		Sophomore		Junior		Senior		Freshman		Sophomore		Junior		Senior			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	Boys	Girls
Both smoke	1,020	18.3	1,093	32.5	978	37.5	726	42.7	1,022	6.5	1,185	15.3	898	23.2	768	32.8	31.9	18.5
Only father smokes	784	14.5	844	23.9	760	34.1	630	36.2	726	3.3	905	9.9	740	14.6	585	25.0	26.3	12.4
Only mother smokes	125	14.4	164	23.2	130	28.5	99	30.3	106	7.5	156	9.6	110	29.1	83	31.3	23.6	18.1
One an ex-smoker and one a current smoker	137	15.3	168	25.6	138	26.1	112	30.4	144	4.2	151	8.6	147	15.0	105	24.8	23.9	12.3
One or both an ex-smoker and neither a current smoker	201	11.4	205	19.0	181	18.8	155	32.3	150	3.3	212	4.2	158	7.6	160	24.4	19.5	8.8
Neither smokes	531	8.1	566	14.7	480	21.0	371	26.1	443	3.4	558	4.1	489	7.0	375	15.2	16.7	6.8
One or both not stated	158	14.6	144	28.5	89	24.7	71	22.5	175	2.3	150	13.3	115	12.2	104	24.0	22.7	12.4
Total	2,956	14.5	3,184	25.2	2,756	31.1	2,164	35.4	2,766	4.6	3,317	10.6	2,657	16.2	2,180	26.2	25.8	13.6
P (based on column variation)	0.0002		<0.0001		0.0002		0.0003		0.01		<0.0001		<0.0001		<0.0001		<0.0001	<0.0001

Table 3—Percentage of Current Regular Cigarette Smokers by School System, All Students

	Boys								Girls								Standardized Percentages	
	Freshman		Sophomore		Junior		Senior		Freshman		Sophomore		Junior		Senior			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	Boys	Girls
Catholic schools	422	17.1	300	32.3	275	37.8	194	44.3	271	3.0	218	13.3	180	28.3	177	42.4	32.0	20.1
City public	2,087	15.1	2,211	24.2	1,975	31.3	1,536	35.4	2,102	5.1	2,425	11.1	1,964	15.5	1,627	27.0	25.7	13.8
Suburban public	447	9.2	673	25.3	506	26.3	434	31.1	393	3.1	674	7.7	513	14.4	376	14.9	22.4	9.6
Total	2,956	14.5	3,184	25.2	2,756	31.1	2,164	35.4	2,766	4.6	3,317	10.6	2,657	16.2	2,180	26.2	25.8	13.6
P (based on column variation)	0.004		0.03		0.02		0.04		0.10		0.02		0.0001		<0.0001		<0.0001	<0.0001

tude scale was used also in the requestioning of all the students.

7. A special study was made of the effect of a film on smoking, sponsored by another organization, shown in assembly to the students of a school which was among those studied, but not included in the six experimental groupings.

8. At the same time as the requestioning of the students in the study, a nationwide interview study of a representative sample of 4,000 high school students was undertaken by a commercial youth survey organization. The interview form used was based on the questionnaire already developed in this study. The purpose was to get nation-wide figures on smoking in the high schools by various demographic analyses and to verify the relationships found in Portland between various factors and smoking behavior.

At the present time, all the basic field work for the study as outlined previously has been completed. This report is based solely on an analysis of the first questionnaire (October, 1958) administered at the beginning of the study.

Distribution of Smoking Behavior

Information on smoking was obtained near the beginning of the school year from 21,980 high school students (11,060 boys and 10,920 girls) in the city of Portland, Ore., and the most urbanized portion of the surrounding metropolitan area in Oregon. All students from 11 Portland public high schools, five Catholic parochial high schools, and five suburban public high schools are included in the study.

Table 1 shows the percentage distribution of smoking habits of all students by school grade and sex. The proportion classified "Never Smoked" declines steadily during the four school years, ranging among the boys from 30.8 per cent of the freshmen to 19.0 per cent of the seniors and among the girls from 58.9 per cent of the freshmen to 31.7 per cent of the seniors. The percentage of "Experimenters"—those that tried cigarettes a few times just to see what they were like—comprises about one-third of both boys and girls, except that it is somewhat higher (41.6 per cent) among the freshman boys. Ex-smokers also do not vary significantly in frequency from class to class but are found more frequently among the boys (8.7 per cent) than among the girls (3.0 per cent). Those classified as "Current Occasional"—cigarette smoking at a frequency of less than once a week—constitute only 4.2 per cent of the boys and 3.0 per cent of the girls and do not show any systematic class variation.

The remainder of this report will be concerned with regular cigarette smoking—defined as smoking at least once a week; 25.8 per cent of the boys and 19.7 per cent of the girls are so classified. Each successive school grade has a higher percentage of smokers than the preceding class. For boys the percentage of current regular cigarette smokers is 14.5 per cent of the freshmen, 25.2 per cent of the sophomores, 31.1 per cent of the juniors, and 35.4 per cent of the seniors. For girls, the corresponding figures are 4.6 per cent for freshmen, 10.6 per cent for sophomores, 16.2 per cent for juniors, and 26.2 per cent for seniors. Table 1a shows that almost four-fifths of the boys and three-fourths of the girls who are current regular cigarette smokers do so daily and that 28.3 per cent of the boys and 15.4 per cent of the girls smoke half a pack or more per day. The amount smoked increases during the four school years among the regular smokers. For example, the percentage of regular smokers consuming a half a pack a day or more rises from 13.8 per cent of the freshman boys to 38.5 per cent of the senior boys and from 7.0 per cent of the freshman girls to 15.4 per cent of the senior girls. In order to adjust for minor variations in the proportions of students in the four

Table 4—Percentage of Current Regular Cigarette Smokers by Parental Education, All Students

	Boys								Girls								Standardized Percentages	
	Freshman		Sophomore		Junior		Senior		Freshman		Sophomore		Junior		Senior			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	Boys	Girls
Neither parent a high school graduate	389	22.6	417	32.4	379	38.5	294	36.4	439	10.0	507	15.2	437	20.1	387	24.8	32.1	17.0
One parent a high school graduate and the other not a high school graduate	456	17.8	549	29.0	489	34.2	398	35.9	490	4.5	573	14.0	443	17.6	397	29.0	28.7	15.5
Both parents high school graduates	677	13.4	719	24.1	588	29.4	437	34.1	607	3.3	679	8.5	526	12.4	393	25.4	25.1	11.5
One parent attended college and the other a high school graduate	506	11.9	524	25.2	452	28.1	363	34.7	407	2.9	553	8.1	459	17.6	387	28.2	24.2	13.1
Both parents attended college	594	9.1	643	16.8	556	26.8	455	31.6	498	2.2	670	6.3	499	12.8	393	25.7	20.1	10.7
All others, including not stated	334	16.5	332	28.3	292	32.2	217	38.2	325	5.8	335	14.6	293	18.4	223	22.4	28.1	14.9
Total	2,956	14.5	3,184	25.2	2,756	31.1	2,164	35.4	2,766	4.6	3,317	10.6	2,657	16.2	2,180	26.2	25.8	13.6
P (based on column variation)	<0.0001		<0.0001		0.02		0.75		<0.0001		<0.0001		0.01		0.64		<0.0001	<0.0001

school grades all over-all percentages for various subgroups have been standardized to the school grade distribution of the entire population of 11,060 boys and 10,920 girls.

Parental Smoking Behavior

A total of 7,690 (35.0 per cent) of the students had parents both of whom smoked; an additional 5,974 (27.2 per cent) reported that only the father smoked, while 973 (4.4 per cent) said that only the mother smoked. There were 1,102 (5.0 per cent) students who reported that one parent was an ex-smoker and the other parent was a current smoker; while 1,422 (6.5 per cent) reported that one or both parents was an ex-smoker and neither parent was a current smoker. The number of students who reported that neither parent smoked was 3,813 (17.3 per cent). Parental smoking histories were incomplete for the remaining 1,006 students (4.6 per cent).

Parental smoking behavior is significantly related to the smoking behavior of high school students. Table 2 shows that as regular cigarette smoking consistently rises with each successive school year and is more frequent among boys than girls it is highest among the children of families in which both parents smoke cigarettes (31.9 per cent of the boys, 18.5 per cent of the girls), intermediate in families in which only one parent smokes cigarettes (25.9 per cent of the boys, 13.1 per cent of the girls), and lowest in families in which neither parent has ever been a smoker (16.7 per cent of the boys, 6.8 per cent of the girls).

The smoking behavior of boys tends to conform more closely to that of the father; whereas the smoking behavior of the girls follows more closely that of the mother. If the father is the only parent who smokes, 26.3 per cent of the boys smoke as against 23.6 per cent in families in which the mother is the only parent who smokes. Among girls, 18.1 per cent smoke if the mother is the only smoker and only 12.4 per cent if the father is the only smoker.

The percentage of smokers among the children in families in which one or both parents has given up cigarette smoking is significantly lower than the percentage in families in which the parent (or parents) has continued to smoke. If one or both parents has discontinued cigarette smoking and neither is a current smoker the proportion of students who smoke is nearly as low (19.5 per cent of boys, 8.8 per cent of girls) as in families in which neither parent ever smoked (16.7 per cent of boys, 6.8 per cent of girls). If one parent has discontinued and the other continues to smoke, the proportion of students who smoke is somewhat higher (23.9 per cent of boys, 12.3 per cent of girls), but remains lower than the proportion in families in which both parents continue to smoke (31.9 per cent of boys, 18.5 per cent of girls).

The percentage of smokers among children in the families in which the father smokes a pipe or cigars, but not cigarettes, is intermediate between those in families in which the father smokes cigarettes and those in which the father has never smoked. In families in which the father smokes, but not cigarettes, and the mother smokes cigarettes, the percentage of smokers among the children (32.0 per cent of the boys and 15.8 per cent of the girls) is about the same as in those families in which both parents smoke cigarettes (31.9 per cent of the boys, 18.5 per cent of the girls). If the father smokes only pipes or cigars and the mother does not smoke, the percentage of smokers (21.1 per cent of the boys and 9.5 per cent of the girls) is closer to those in families in which the parents have never smoked (16.7 per cent of the boys, 6.8 per cent of the girls) or in which neither smokes be-

Table 5—Percentage of Current Regular Cigarette Smokers by Age Within Grade, All Students

	Boys								Girls								Standardized Percentages	
	Freshman		Sophomore		Junior		Senior		Freshman		Sophomore		Junior		Senior			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	Boys	Girls
Older than classmates	366	30.6	426	40.8	309	45.6	255	41.2	212	13.7	283	21.9	146	25.3	119	25.2	39.4	21.3
Typical age*	2,044	12.7	2,313	23.7	1,965	30.7	1,536	34.6	2,037	4.1	2,488	10.0	1,918	15.5	1,568	27.1	24.6	13.3
Younger than classmates	546	10.4	445	17.5	482	23.0	373	34.3	517	2.9	546	7.3	593	16.2	493	23.5	20.3	11.6
Total	2,956	14.5	3,184	25.2	2,756	31.1	2,164	35.4	2,766	4.6	3,317	10.6	2,657	16.2	2,180	26.2	25.8	13.6
P (based on column variation)	<0.0001		<0.0001		<0.0001		0.24		<0.0001		<0.0001		0.02		0.39		<0.0001	<0.0001

* Typical age is 14 years for the freshmen, 15 years for the sophomores, 16 years for the juniors, and 17 years for seniors. This group includes a small number of "not stated."

Table 6—Percentage of Current Regular Cigarette Smokers by Athletic Participation, All Students

	Boys								Girls								Standardized Percentages	
	Freshman		Sophomore		Junior		Senior		Freshman		Sophomore		Junior		Senior			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	Boys	Girls
No Athletics	757	18.2	902	29.8	767	35.6	652	41.0	1,065	4.5	1,428	10.2	1,292	13.5	1,182	23.6	30.3	12.2
Athletics—no coach	811	16.3	782	28.3	693	37.2	569	37.4	993	5.6	1,185	11.9	948	17.9	768	29.0	29.1	15.2
Athletics—with coach	1,388	11.5	1,500	20.7	1,296	25.1	943	30.2	708	3.4	704	9.1	417	20.4	230	30.0	21.2	14.6
Total	2,956	14.5	3,184	25.2	2,756	31.1	2,164	35.4	2,766	4.6	3,317	10.6	2,657	16.2	2,180	26.2	25.8	13.6
P (based on column variation)	<0.0001		0.003		<0.0001		0.001		0.11		0.17		0.55		0.07		<0.0001	0.07

cause at least one has discontinued (19.5 per cent of the boys and 8.8 per cent of the girls).

School System

The city public high schools supplied 15,927 (72.5 per cent) of the students in the study; the suburban public high schools, 4,016 (18.3 per cent) students; and the Catholic parochial high schools, 2,037 (9.3 per cent) students.

As shown in Table 3, the percentage of smokers is highest among students in the parochial high schools, intermediate among students in the city public high schools, and lowest among those in the suburban public high schools. Among boys the standardized percentage of smokers is 32.0 per cent in the parochial schools, 25.7 per cent in the city schools, and 22.4 per cent in the suburban schools. Among girls the standardized percentage is 20.1 per cent in the parochial schools, 13.8 per cent in the city schools, and 9.6 per cent in the suburban schools. Among the girls in the parochial schools, the percentage of smokers is low in the freshman year, but each successive class contains an appreciably higher proportion of smokers so that at the beginning of the senior year the percentage of smokers is nearly as high as that of the senior parochial school boys and even higher than that of the senior city public school boys.

Parental Educational Level

There were 3,249 (14.8 per cent) students who reported that neither parent was graduated from high school; 3,795 (17.3 per cent) said that one parent was graduated from high school while the other was not; 4,626 (21.0 per cent) had parents both of whom were graduated from high school; 3,651 (16.6 per cent) reported that one parent attended college while the other parent was graduated from high school, and 4,308 (19.6 per cent) reported that both parents attended college. Most of the additional 2,351 (10.7 per cent) students did not state the education of one or both parents while a small proportion reported extreme variations of parental education not provided for within the five classes used.

Table 4 shows that the percentage of smokers is inversely related to the educational level of the parents, varying from 32.1 per cent of the boys and 17.0 per cent of the girls in families in which neither parent was graduated from high school to 20.1 per cent of the boys and 10.7 per cent of the girls in families in which both parents attended college. This relationship, although more pronounced among boys, is found in each of the first three classes, especially the freshman class, but is negligible in the senior class. This suggests that in families of parents with a low educational level smoking is taken up at an earlier time, but that educational level does not affect whether or not smoking is eventually taken up within the high school years.

Age Within Grade

Since age was obtained in terms of "age at last birthday," students could be divided into those at the modal age (14 for freshmen, 15 for sophomores, 16 for juniors, 17 for seniors), those above the modal age, and those below the modal age. The small proportion (2.4 per cent) who did not state age was classified with the modal group. It should be noted that a more precise measure of age to the nearest month would undoubtedly have classified those within a month or two or their next birthday in the next higher age group.

Students who are older than their classmates numbered 2,116 (9.6 per cent), those at the modal age numbered 15,869 (72.2 per cent), and there were 3,995 (18.2 per cent) students who were

Table 7—Percentage of Current Regular Cigarette Smokers by School Activities (Other Than Athletics), All Students

	Boys								Girls								Standardized Percentages	
	Freshman		Sophomore		Junior		Senior		Freshman		Sophomore		Junior		Senior			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	Boys	Girls
None	1,336	16.0	1,314	29.3	870	38.9	504	42.3	740	7.7	626	20.1	368	29.1	261	34.5	30.7	22.0
One or more activities	1,620	13.3	1,870	22.2	1,886	27.5	1,660	33.3	2,026	3.5	2,691	8.4	2,289	14.1	1,919	25.1	23.3	11.9
Total	2,956	14.5	3,184	25.2	2,756	31.1	2,164	35.4	2,766	4.6	3,317	10.6	2,657	16.2	2,180	26.2	25.8	13.6
P (based on column variation)	0.14		0.002		<0.0001		0.008		<0.0001		<0.0001		<0.0001		0.005		<0.0001	<0.0001

Table 8—Percentage of Current Regular Cigarette Smokers by Mathematics Course Taken, All Students

	Boys								Girls								Standardized Percentages	
	Freshman		Sophomore		Junior		Senior		Freshman		Sophomore		Junior		Senior			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	Boys	Girls
Other	1,044	22.5	1,043	36.4	1,052	39.2	856	42.3	1,044	8.1	1,210	16.6	1,093	21.4	1,005	30.1	34.5	18.3
Algebra	1,912	10.1	2,141	19.7	1,704	26.1	1,308	30.8	1,722	2.5	2,107	7.1	1,564	12.5	1,175	22.8	20.9	10.4
Total	2,956	14.5	3,184	25.2	2,756	31.1	2,164	35.4	2,766	4.6	3,317	10.6	2,657	16.2	2,180	26.2	25.8	13.6
P (based on column variation)	<0.0001		<0.0001		<0.0001		<0.0001		<0.0001		<0.0001		<0.0001		<0.0009		<0.0001	<0.0001

a year or more younger than their classmates.

Table 5 shows that students who are older than their classmates have a very high proportion of smokers (39.4 per cent of the older boys and 21.3 per cent of the older girls, against 24.6 per cent of the boys and 13.3 per cent of the girls of typical age, and against 20.3 per cent of the younger boys, and 11.6 per cent of the girls of younger ages). In fact, the percentage of smokers among pupils older than most of their classmates tends to be higher than among those of the same age who are in the typical school grade for that age. Students who are younger than their classmates tend to have a rate of smoking intermediate between that of their classmates of typical age and that of their age-mates in a lower grade.

Extracurricular Activities

There were 3,078 (27.8 per cent) boys who did not participate in any athletics; 2,855 (25.8 per cent) who reported taking part in athletic activity, but not with a coach; while 5,127 (46.4 per cent) said they participated in sports and had a coach. There were 4,967 (45.5 per cent) girls reporting no athletics; 3,894 (35.7 per cent) saying they participated in some type of sports, but without a coach; and 2,059 (18.9 per cent) who reported engaging in athletics and had a coach.

Table 6 shows that boys who do not participate in athletics, or if they do participate, do not report having a coach, have a higher proportion of smokers (30.3 per cent and 29.1 per cent) than those who report having a coach (21.2 per cent). Participation in athletics is not significantly related to smoking among girls.

There were 4,024 (36.4 per cent) boys and 1,995 (18.3 per cent) girls who reported that they did not take part in any activities other than sports, while 7,036 (63.6 per cent) of the boys and 8,925 (81.7 per cent) of the girls reported that they took part in such extracurricular activities.

Table 7 shows that the percentage of smokers is higher among students who do not participate in school activities other than sports (30.7 per cent of the boys, 22.0 per cent of the girls) than among those who participate in at least one such activity (23.3 per cent of the boys, 11.9 per cent of the girls). Among those who do participate, the lowest percentage of smokers is found among members of honor societies and among those who belong to religious clubs.

College Preparation

A total of 8,347 (38.0 per cent) took general mathematics while 13,633 (62.0 per cent) reported taking algebra but not general mathematics. This question was included to serve as an index of intention to attend college since algebra is ordinarily a required course for college entrance.

Table 8 shows that the percentage of smokers is higher among students who have taken or are taking general mathematics rather than algebra (34.5 per cent versus 20.9 per cent among the boys; 18.3 per cent versus 10.4 per cent among the girls).

Patterns of Smoking

Table 9 shows that among current regular smokers more than half the boys and almost three-quarters of the girls smoke filter cigarettes exclusively. The proportion of exclusive filter users, however, varies inversely with the amount smoked, ranging from 72.9 per cent of the boys and 85.1 per cent of the girls who smoke one to six times a week to 38.7 per cent of the boys and 47.0 per cent of the girls who smoke a pack or more a day.

The smoking environment defined as

Table 9—Percentage Distribution of Regular Cigarette Smokers, by Amount Smoked According to Type of Cigarette Smoked, Smoking Environment, and Median Length of Time Smoked, All Students

	Boys						Girls					
	1–6 per Week	1–4 per Day	5–9 per Day	10–19 per Day	20+ per Day	Total	1–6 per Week	1–4 per Day	5–9 per Day	10–19 per Day	20+ per Day	Total
Type of Cigarette Usually Smoked												
Filter only	72.9	62.7	54.2	46.6	38.7	57.4	85.1	75.2	67.7	65.4	47.0	73.6
Plain only	18.3	28.9	38.9	48.9	49.8	35.0	9.3	19.8	26.7	32.1	33.3	20.7
Mixed	6.3	6.7	6.1	4.2	9.5	6.2	3.5	4.2	5.1	2.5	18.2	4.7
Not stated	2.4	1.6	0.7	0.4	2.0	1.3	2.0	0.8	0.5	—	1.5	1.0
No. of smokers	584	730	732	552	253	2,851	397	480	375	162	66	1,480
Per cent	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)
Smoking Environment												
Usually only with others	34.8	21.9	8.5	4.9	4.7	16.3	36.8	23.5	7.7	3.7	7.6	20.2
Usually only alone	9.1	5.9	3.7	0.5	2.0	4.6	15.4	11.9	3.5	1.9	1.5	9.1
Mixed	53.1	71.1	85.4	93.1	89.3	77.0	45.8	63.3	86.7	93.8	89.4	69.1
Not stated	3.1	1.1	2.5	1.4	4.0	2.2	2.0	1.3	2.1	0.6	1.5	1.6
No. of smokers	584	730	732	552	253	2,851	397	480	375	162	66	1,480
Per cent	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)
Median No. of months smoked	18	24	30	36	48	28	12	20	24	28	36	22

usually smoking when alone or usually smoking in the company of others, or both, also varies with the amount smoked. About nine out of ten of those who smoke five or more cigarettes a day do so in both situations. Among those who smoke less than this amount, however, about three out of ten usually smoke when in the company of others and one out of ten usually smokes when alone. Solitary smoking is about twice as common among girls than boys for this group of regular smokers consuming less than five cigarettes a day.

The length of time that current regular smokers report they have been smoking also varies widely by the amount smoked for both boys and girls. The median number of months smoked for those smoking one to six times a week is 18 months for boys and 12 months for girls, while for those smoking a pack or more a day it is 48 months for boys and 36 months for girls. Characteristics of regular smoking, such as type of cigarette, social versus solitary or mixed smoking, and length of time since starting to smoke are more closely related to the rate of current smoking than to school class.

Discussion

A number of groups with a high proportion of regular smokers within the high school population have been identified. These include two measures relating to the family (parental smoking and parental education), four personal characteristics relating to peer groups within the school (organized athletics for boys, other extracurricular activities, type of mathematics course taken, and age in relationship to classmates), and finally the school system.

What is the relative importance of these several measures and to what extent do they overlap? An analysis of variance of the four personal-school factors shows that for the boys, participation in athletics and participation in other extracurricular activities are more or less equivalent in terms of proportions of students smoking. When these two factors are combined into one, the three factors that remain are roughly equal in effect and additive. An index from 0 to 3 was therefore constructed giving 1 point for nonparticipation in extracurricular activities (including organized athletics for the boys), 1 point for taking general mathematics (rather than algebra alone) and 1 point for being above the modal age of one's classmates. About half of the students are in class 0, 35 per cent in class 1, 13 per cent in class 2, and the small remainder (3 per cent of the boys and 2 per cent of the girls) in the extreme class 3. Table 10 shows the proportion of current regular smokers in each group. There is a significant increase in the percentage of smokers for each additional point in the index score with the standardized proportion of smokers ranging from 18.4 per cent for boys with a score of 0, to 28.9 per cent, 37.4 per cent, and 53.0 per cent for each successive score. For girls, the corresponding proportion of smokers varies from 9.5 per cent for score 0, to 14.9 per cent, 24.5 per cent, and 28.3 per cent for each successive score.

When a cross-tabulation is made of parental education by the personal-school index, it is clear that most of the relationship with smoking is accounted for by the index since, within constant levels of the index score, there is no significant variation by parental educational level.

When a cross-tabulation is made of the proportion of smokers, by parental smoking and the personal-school index, it is clear that these two factors are independently important since the proportion of regular smokers varies directly with each factor even when the other is held constant. The most extreme groups, in terms of cigarette smokers, are therefore those with an index score of 0 whose parents do not smoke (11.3 per cent of

Table 10—Percentage of Current Regular Cigarette Smokers by Index of Personal-School Factors, All Students

Index	Boys								Girls								Standardized Percentages	
	Freshman		Sophomore		Junior		Senior		Freshman		Sophomore		Junior		Senior			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	Boys	Girls
0	1,374	8.0	1,539	17.1	1,336	23.1	1,072	28.7	1,302	1.8	1,723	5.8	1,412	11.9	1,084	22.2	18.4	9.5
1	1,030	16.7	1,087	28.3	971	33.7	738	40.5	992	4.9	1,131	11.7	992	17.5	837	29.3	28.9	14.9
2	467	25.1	461	36.9	374	47.1	305	42.6	412	10.4	401	25.7	285	30.2	229	33.6	37.4	24.5
3	85	35.3	97	61.9	75	58.7	49	57.1	60	20.0	62	27.4	38	39.5	30	26.7	53.0	28.3
Total	2,956	14.5	3,184	25.2	2,756	31.1	2,164	35.4	2,766	4.6	3,317	10.6	2,657	16.2	2,180	26.2	25.8	13.6
P (based on column variation)	<0.0001		<0.0001		<0.0001		<0.0001		<0.0001		<0.0001		<0.0001		0.003		<0.0001	<0.0001

the boys and 5.1 per cent of the girls smoke) and those with an index score of 3, both of whose parents smoke (58.9 per cent of the boys and 32.3 per cent of the girls smoke).

If all students had the proportion of smokers found among those with parents who do not smoke, there would be 32 per cent fewer smokers among the boys and 46 per cent fewer among the girls. If all students had the proportion of smokers found among those with a personal-school index of 0, there would be 28 per cent fewer smokers among the boys and 29 per cent fewer among the girls. If all students had the proportion of smokers found among those who have both an index score of 0 and parents who do not smoke, there would be 54 per cent fewer smokers among the boys and 60 per cent fewer among the girls.

In other words these two independent factors are almost completely additive. Jointly they account for over one-half the boys who smoke and for three-fifths of the girls who smoke.

The relatively high proportion of smokers in the Catholic parochial schools and the relatively low proportion of smokers in the suburban schools is not accounted for by differences in the factors described above. In fact, the parochial schools contain a slightly higher proportion than do the other schools of the students with a low index score and from more highly educated families, the type of students that would tend to have a smaller proportion of smokers. Questions were included in the second questionnaire on the attitudes of the students toward smoking and on their parents' r actions toward smoking by the respondents. These two areas of investigation, now being analyzed, may throw some light on this finding.

Summary

A study was made of smoking among high school students in Portland, Ore.,

and the surrounding highly urbanized area. Two relatively independent factors were found that describe the groups with a high proportion of smoking: (1) a correspondence with family practices as indicated by parental smoking, and (2) a syndrome of personal factors characterizing inactive students (nonparticipants in extracurricular activities) who tend to be scholastically unsuccessful (older than their classmates) and with lower academic goals (not taking algebra as a college preparatory course). The significantly higher proportion of smokers found in the Catholic parochial schools is not accounted for by these factors.

ACKNOWLEDGMENT—The authors are indebted to the many school principals and teachers who cooperated in this study. We are particularly grateful to Jonathan Edwards, superintendent of schools, Portland, the Reverend Martin Thielen, superintendent of schools, Archdiocese of Portland, and Errol C. Rees, superintendent of schools, Multnomah County, for their cooperation.

The authors are associated with the Medical Affairs Department, American Cancer Society, Inc., New York, N. Y.

Problems of "Man Versus Environment"

A conference on "Man Versus Environment" was held in May, 1958, to review and evaluate problems of public health resulting from new developments in science and technology. At that time attention was focused on the research needs in the major fields of water supply, water pollution, air pollution, food technology, and occupational health.

The conference was sponsored by the National Institutes of Health and the Bureau of State Services of the Public Health Service. Henry F. Vaughan, Dr.P.H., retiring dean of the Michigan School of Public Health, who was chairman of the National Institutes' Sanitary Engineering and Occupational Health Study Section, conceived the conference and headed the group planning for it. Robert A. Kehoe, M.D., director, Kettering Laboratory of Applied Physiology, University of Cincinnati College of Medicine, made the keynote address.

Dr. Kehoe's address, together with the conference summary by Abel Wolman, professor of sanitary engineering, Johns Hopkins University, is included in the proceedings now available. Also to be found are the addresses of Leslie A. Chambers, Ralph Fuhrman, Mark E. Hollis, Harry E. Jordan, Louis C. McCabe, Jack E. McKee, Emil Mrak, James H. Sterner, and Walter Tiedeman.

The proceedings, which were edited by Harry A. Faber and Marie H. Peak of the Division of Engineering Services staff, are available from Research Grants Coordinator, Division of Engineering Services, Public Health Service, Washington 25, D. C.

Various aspects of an intensive program to control staphylococcal infections at the University of Texas Medical Branch Hospital are described and discussed in the following paper. The important position of the laboratory in this program is emphasized.

UTILIZATION OF LABORATORY FINDINGS IN DIAGNOSIS AND CONTROL OF HOSPITAL STAPHYLOCOCCAL INFECTIONS

Joseph A. Bass, Ph.D., and Harriet M. Felton, M.D., D.Sc.M.

IN THE FALL AND WINTER of 1956 an outbreak of staphylococcal infections was noted in infants delivered at the University of Texas Medical Branch Hospitals. An intensive control program, which included the continuous screening of all personnel assigned to the nursery area, was instituted. As a result of these measures no serious staphylococcal diseases in the neonatal period were seen during the subsequent 19 months. At the time of the original epidemic a staphylococcal typing laboratory was established. In an effort to determine whether foci of infections existed elsewhere in the hospital a nasal culture survey of all personnel and patients was carried out in January, 1957. Results of these studies have been reported elsewhere.[1,2] During the following year, all coagulase-positive staphylococci isolated from the clinical pathology laboratories were phage typed and tested for antibiotic susceptibility. An analysis of the various types of staphylococci involved in infections showed that approximately 50 per cent of serious infections were attributable to phage type 80/81 strains, with 13 per cent being caused by nontypable strains resistant to two or more antibiotics.[3,4]

In the fall of 1957 a major outbreak of staphylococcal disease occurred on the adult Medicine Services. Although some attempts were made to curtail this outbreak, a concerted effort to control outbreaks throughout the hospital was not begun until the increasing incidence of infections made it apparent that a hospital-wide control program had to be instituted.

In February, 1958, a Surveillance Committee was appointed to serve in advisory capacity to the administrator of hospitals. An adult isolation unit was established, in addition to the existing isolation unit for children. An infectious disease control service which consisted of a carrier control center and facilities for the consistent management of personnel and students with lesions was set up. A survey program of all personnel and students on ward services, as well as patients under their care, was instituted. At the same time, arrangements were made for all Staphylococcus aureus isolates from clinical pathology laboratories and all departmental research laboratories to be processed by the Staphylococcus Phage Typing Laboratory in the Department of Microbiology.

In view of the widely separated and diverse sources of cultures submitted, and the necessity for the rapid dissemination of results, the typing laboratory was made the focal point from which the entire control program operated. All pertinent information was recorded on punch cards by laboratory personnel. Results of all cultures were reported to the respective laboratories and areas submitting the cultures. The appearance of potentially dangerous strains in either nasal cultures or lesions was reported directly to the Infectious Disease Control Service.

Due to the magnitude of the program, the following decisions were necessary:

1. The types or strains to be given special consideration as potentially dangerous—Previous experience with cultures from patients and personnel lesions had shown that the majority of serious infections were due to the epidemic 80/81 strains and to nontypable multiple-resistant organisms. The remaining infections had been found to be caused by a variety of types scattered throughout the various phage groups. In view of the large number of tests to be performed daily, complete phage typing was not feasible. Individual phage typing was therefore limited to 80/81 and 44A phages which constitute the so-called miscellaneous group. The gross pattern was completed by the use of pooled phages divided into Groups I, II, III, and IV.[5]

Special consideration was given to any strain resistant to two or more antibiotics. Cultures were routinely tested by the disk method to penicillin, tetracycline, erythromycin, novobiocin, chloramphenicol, oleandomycin, ristocetin, bacitracin, and neomycin. In the past three months kanamycin has replaced neomycin in cultures isolated from lesions.

In view of the therapeutic problems involved in the management of infections caused by multiple-resistant organisms and the previous experiences with 80/81 strains, these two groups were considered to be the dangerous strains.

2. Collection of cultures and laboratory procedures—All lesion cultures from patients or infected personnel were routed through the central clinical research laboratories or departmental research laboratories to insure complete bacteriologic diagnosis. Individual colonies of pigmented staphylococci were transferred to trypticase soy broth and submitted to the typing laboratory the same day.

Nasal cultures for survey purposes and carrier control were sent directly to the typing laboratory and plated for isolation on milk agar plates. Following overnight incubation at 37° C, pigmented colonies were subcultured to broth for typing. Plates showing no pigmented colonies were incubated at room temperature for an additional 24 hours.

Following three to four hours of incubation, most broth cultures showed sufficient turbidity for testing coagulase activity and for determining phage and antibiotic susceptibility patterns.

The primary purpose of the establishment of the Surveillance Committee was the control of staphylococcal cross-infections in the University of Texas Medical Branch Hospitals. Besides the major control measures mentioned previously the committee, through the administrator of hospitals, set forth rules and regulations for the improvement of hospital hygiene.[6] These included intensification and standardization of housecleaning procedures, revision in the methods of laundry handling and garbage disposal, limitation of patients to their own wards, improvement of infected patient transportation throughout the hospital, revision of nursing procedures with special emphasis on handwashing and surgical dressing procedures.

Studies were also conducted to determine the role of fomites and air transmission in cross-contamination problems

Table 1—Nasal Carrier Clearance Following Local Antibiotic Application

Phage Type	Total No. Treated	Cleared*	Recurrents*	Persistents*
80/81 resistant†	217	84.8	7.8	7.4
80/81 sensitive‡	141	86.5	7.1	6.4
Other typables resistant	51	88.2	3.9	7.8
Nontypable resistant	50	88.0	8.0	4.0

* Per cent.
† Resistant to two or more antibiotics.
‡ Sensitive to all antibiotics or resistant to only one antibiotic.

in the institution.[7] The findings did not justify their consideration as the primary route of cross-infection.

On the other hand, a relation between the occurrence of nasal carriers and infected patients under their care was noted at the time of the original survey.[1] It has further been shown that the elimination of nasal carriers in the nurseries successfully prevented subsequent outbreaks of infections in newborns.[2] In addition, the importance of the carrier as a means of cross-contamination has been demonstrated by the fact that the admission of healthy carriers to the newborn areas in June, 1958, resulted in a prompt reoccurrence of infections in babies and a rapid spread of the epidemic strain throughout other personnel.

Special emphasis has been placed on personnel with lesions, since such persons can obviously transmit organisms more readily to patients and fellow workers. The detection of such lesions has been the basis for the removal of these persons from duty in patient areas. The isolation of infected patients in closely supervised units with specially assigned personnel has served to remove a second important source. The treatment of personnel carriers with nonsystemic antibiotic preparations has reduced the carrier rate significantly. As may be seen in Table 1, 85 per cent of nasal carriers can be cleared following one or two courses of local therapy. Of the remainder, approximately half can be cleared, but appear to be highly susceptible to recolonization when placed in a heavily seeded environment. The "persistent" carrier fails to respond to local treatment, has a tendency to develop lesions, and usually does not clear spontaneously when removed from contact with infected patients.

Results obtained from 748 cultures of coagulase-positive S. aureus strains isolated from patient lesions (including outpatients) indicated that during the seven-month period of this program almost 40 per cent of staphylococcal infections were due to 80/81 strains (Table 2). Nontypable strains, both multiple-resistant and sensitive, were implicated in 26 per cent of patient lesions. The remaining 35 per cent were distributed fairly evenly among the other groups. It is of particular interest to note that more than 50 per cent of the infections were due to single-resistant or completely sensitive staphylococci. On the other hand, the majority of severe infections, and most deaths, were caused by multiple-resistant strains.

The number of new hospital acquired infections caused by the 80/81 strains in patients and personnel was noted each week since the beginning of the control

Table 2—Incidence of Various Types of Coagulase-Positive S. aureus Isolated from Infections*

Phage Types	Resistant† Strains	Sensitive† Strains
80/81	30.1‡	8.3‡
Nontypable	7.8	18.2
I's	4.4	2.9
III's	2.5	6.7
44A	0.7	7.4
Other typables	1.6	9.4
Total	47.1	52.9

* Includes both inpatients and outpatients.
† Resistant = Resistant to two or more antibiotics.
Sensitive = Resistant to one antibiotic only or sensitive to all antibiotics tested.
‡ Per cent.

program. The findings, plotted on the basis of a three-week moving average, are shown in Figure 1. A rapid decline occurred during the first four months. A minor rise in infections was seen during the latter part of June and the early part of July. Although this in part may have been attributable to a general relaxation throughout the hospital, following the original momentum of the control program, it is believed that at least two other factors should be considered: (1) The seasonal turnover in professional personnel (i.e., residents, interns, and graduate nurses), since it was found that approximately 13 per cent of new employees in June and July were nasal carriers of phage-type 80/81 S. aureus. (2) A compromise in the carrier control program of the nurseries had to be made when it was no longer possible to exclude positive carriers from the area because of an acute personnel shortage.

A second rise coincided with an even more acute shortage of personnel throughout the institution as a result of the fact that due to state regulations accumulated vacation time must be taken before September first. Also, during this period the monthly delivery rate increased 30 per cent above the capacity for which the nursery was designed.

In classifying inpatient infections it was noted that approximately 10 per cent were not hospital acquired. To date, nasal cultures have not been obtained on admission from patients who have been hospitalized either locally or elsewhere within the past year. Since patient nasal carriers constitute a definite source of recontamination, provisions have recently been made to include this group in the control program.

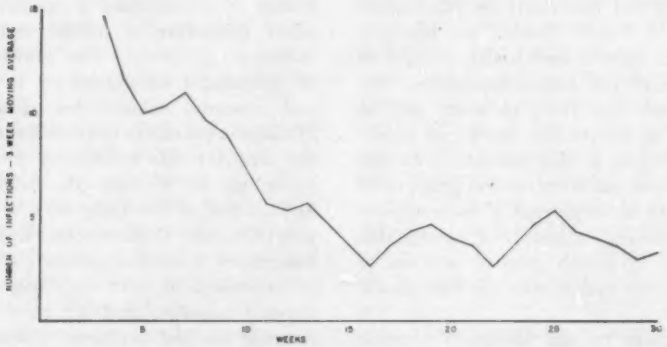

Figure 1—Hospital Acquired Staphylococcus Phage Typing 80/81 Infections, Patients and Personnel

Summary

Various aspects of an intensive program to control staphylococcal infections at the University of Texas Medical Branch Hospitals have been described. The position of the laboratory as the focus for obtaining and disseminating information to referring laboratories and to the Infectious Disease Control Services has been stressed. The role of infected personnel and patients and of the healthy carrier in cross-infection has been discussed. The necessity for screening new personnel and patients recently hospitalized elsewhere is noted.

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University of Michigan and Radiation

The Atomic Energy Commission has approved the University of Michigan's School of Public Health for teaching radiation control and health physics to students holding AEC scholarships. Students after two years of study will be eligible to receive the master of public health degree in this specialty. Enrollment in the radiation control program is open only to employees of state regulatory agencies, although a comparable program in health physics is open to any students with proper academic qualifications.

Elsewhere on the Michigan campus, which has one of the most intensive radiological health programs in the United States, the University Medical School is establishing a special emergency procedure to handle victims of radiation accidents. The growing use of radioactive substances by industries and research laboratories throughout Michigan and northern Ohio has spurred the plan for this emergency procedure according to William H. Beierwaltes, M.D., chief of the University of Michigan Clinical Radioisotope Unit, and emergency team coordinator. The team is organized to care for "less than a dozen" casualties and for handling the unusual medical problems which might result from the increasing use of radioactive materials in modern civilization.

The subject of oral clefts and their consequences has been dealt with technically. However, there has been little study of the untreated anomaly in adults, so that it is difficult to evaluate treatment programs. This study, developed to deal with the problem, offers some preliminary data and considerations.

UNOPERATED ORAL CLEFTS AT MATURATION

I. STUDY DESIGN AND GENERAL CONSIDERATIONS

Frank E. Law, D.D.S., M.P.H., F.A.P.H.A., and John T. Fulton, D.D.S., F.A.P.H.A.

CARL VON GRAEFE, often called the father of plastic surgery, published a lengthy dissertation about treatment of an oral cleft in 1820.[1] Eight years later, an Englishman named James Snell issued a book on oral cleft prosthesis which begins with a history dating back to 1579.[2] This review indicates that the early work was devoted to the repair of acquired clefts in adults, caused mostly by lues or gunshot wounds. Snell, who seems to be among the first to work with congenital clefts, presents some interesting case reports and technics involving both surgery and prosthesis for adults. Speech problems, with all their social and emotional overtones, are mentioned frequently as the compelling motive for treatment.

Snell laments the fact that many infants with oral clefts died of malnourishment, due to inability to suck. This fact, combined with the obvious speech problems of those who survived, probably accounts for the concentration on the surgical repairs of oral clefts in infancy, particularly when the development of anesthesia made better management possible.

The literature on surgery for oral clefts has increased steadily in volume and quality from the early 1800's through to the present day.[3] The development of this surgery is impressive in its imagination and skill but it has not solved the problems of oral clefts. For documentation, one has only to read the prosthetic literature devoted to rehabilitation of adults, which also has grown steadily since the time of Snell.[4]

A small, but growing literature exists concerning the social and emotional effects of facial deformity. At the same time, speech pathologists are concerned with the social and emotional consequences of speech disorders. Thus the individual who is born with a cleft palate and lip suffers a twofold problem. Present indications lead to the conclusion that afflictions of this nature result in a variety of consequences which bear heavily on the adjustment of the individual. However, it seems to be agreed that ease or difficulty of maintaining personal equilibrium is based primarily on the personality of the individual involved, and that certain individuals seem much better able to bear up under such a deformity than do others.

Good speech and appearance are the

compelling motives for treatment and the coalescence of this purpose in the last 20 years has led to the multidiscipline or so-called "team" approach.[5] Treatment continues to concentrate on young children and successful surgery still is the goal, but the biosocial nature of the oral cleft now is recognized and a battery of professional skills help in the diagnosis and treatment plan.

The voluminous literature on oral clefts is devoted essentially to the technics of treatment. Studies of the anomaly itself are few in number. What may be called the "life history" of the untreated oral cleft remains obscure. Its "birth" has not been defined precisely[6]; its growth and development are being studied longitudinally but, so far, have been reported only through early childhood.[7] Finally, there is no systematic description of the final phase of the life history—the untreated anomaly in adults.

This lack of knowledge concerning the latter aspect of the life history makes it difficult to evaluate treatment of these defects. Treatment for an oral cleft, in a biosocial context, can be evaluated adequately only in the mature individual. Rehabilitation includes the reinstatement of the individual into his environment, equipped to function normally in this environment to the limit of his capacity. A proper yardstick seems basic to the answering of certain questions of importance to this kind of evaluation.

1. What is the normal outcome of an oral cleft if allowed to maturate without treatment?
2. How does an adult with an untreated anomaly differ from his peers in physical function, social adjustment, and emotional health?
3. How does such an adult compare with one who has received conventional treatment?

These important questions are the basis of the present study

Methods and Materials

A major problem in establishing this study was the location of a suitable group of cases. The primary criteria for inclusion in the study group were that the person (1) must have reached maturation, 15 years of age or over, and (2) have a palatal cleft which had never received surgical or prosthetic treatment.

The interest and cooperation of the Insular Department of Health made it possible to locate a sizable group of such cases on the Island of Puerto Rico and the study was organized, finally, around this group.

A study team of five dentists, a speech pathologist* and an orthodontist† was assembled with adequate supplies and equipment. This team visited Puerto Rico in June, 1957, and June, 1958. Upon arrival in Puerto Rico this unit was augmented with dentists, social workers and other personnel from the Insular Department of Health and local health centers. The assistance of this personnel was invaluable in organization, interviewing, interpretation, patient management, and the clinical aspects of the study.

Case finding was accomplished, prior to the team's arrival, by the Bureaus of Crippled Children and Dental Health of the Puerto Rico Department of Health assisted by the local Office of Vocational Rehabilitation.

The immediate objectives of the study were:

1. To determine the facial and nasopharyngeal growth and development of these untreated cases.
2. To evaluate their speech and voice quality and, in this area, how well they had adapted to the handicap.
3. To compare the hearing ability of such persons with normal or average groups of the same ages.
4. To study their medical history as it may relate to the palatal condition.
5. To establish the social status of these palatal cleft cases within their group and

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some of the social and emotional problems encountered by these individuals.

To achieve these objectives the following procedures were applied to each study case.

Cephalometric radiographs in various positions and when pronouncing certain vowels were taken. Recording of speech was taped and hearing was tested with a pure tone audiometer. A dental examination and impressions of the upper and lower arches including the palatal defect were made. Intraoral and extraoral color photographs were taken. Interviews were conducted in Spanish by local social workers. The social interview form was developed by a social psychologist* and pretested in Puerto Rico before the actual study began. Medical examinations were conducted on the first study group but, as the results were completely negative, they were not included for the second group. Procedures were carried out at five different health centers in order to obtain complete coverage of the Island.

Data have been collected on 124 native Puerto Ricans during the two study periods. These individuals range from 15 to 57 years of age and are almost equally divided between male and female. Untreated clefts of the palate were present in 51 of these people; eight others had clefts involving only the lip and alveolar process; 29 had palatal clefts with prior surgical repair, and were included for comparison of treated and untreated cases. The other 36 people examined had normal palates and were included in the study as controls for normal growth and speech of Puerto Ricans. They were selected at random from available adults at the examination centers.

Table 1 gives the distribution by age and sex of the 88 treated and untreated cases of oral clefts. It is interesting to note that 90 per cent of this group were between the ages of 15 through 34 years. Some of the factors which may account for the paucity of patients above age 34 are: these patients may have been working and were thus unable or unwilling to attend the clinic; because of their age, they may have felt that treatment was unlikely or they were uninterested in treatment; they may not have survived to these ages, or, because of the oral defect, they may have isolated themselves.

It is of further interest that, in this group, twice as many females had posterior clefts as males, while four of the five bilateral clefts occurred in males. Complete unilateral clefts and clefts involving only the lip and alveolar process were fairly equally divided between the sexes.

Table 2 shows the distribution of cases by type of cleft.

In the eight cases in which the oral cleft involved only the lip and the alveolar process there were none where surgical repair had been attempted on the defect of the alveolar process. The lip had been treated surgically in five instances. This study is interested pri-

Table 1—Distribution by Age and Sex of 88 Patients with Oral Clefts—Puerto Rico, 1957 and 1958

Age Groups	Male	Female	Total
15–19	23	20	43
20–24	9	10	19
25–29	3	7	10
30–34	4	3	7
35–39	–	1	1
40–44	2	1	3
45–49	2	–	2
50–54	–	–	–
55–59	3	–	3
Total	46	42	88

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Table 2—Distribution by Type of Cleft of 88 Cases of Oral Clefts—Puerto Rico, 1957 and 1958

Posterior clefts involving hard and soft palates	33
Unilateral clefts involving lip, alveolar ridge, hard palate, and soft palate (right 10—left 32)	42
Bilateral clefts involving lip, alveolar ridge, hard palate, and soft palate	5
Unilateral clefts involving lip and alveolar ridge (right 2—left 6)	8
Total	88

marily in clefts involving the palate so these eight cases were dropped from further consideration.

It was decided to include, in the untreated palate group, those cases in which the lip had been closed surgically but the palate had never received surgical or prosthetic treatment. Table 3 lists the 47 cases of clefts involving both lip and palate. It shows that 40 of the 47 cases (85 per cent) had received lip repairs. Table 4, presenting the data on palate repairs, shows that only 18 (38 per cent) of the 47 cases had repairs attempted on the palate. Of the 33 cases of posterior clefts, without lip involvement, shown in Table 4, 22 (64 per cent) had no surgical treatment.

General Findings

These unoperated cleft palate cases will be discussed briefly in four general areas: (1) physical functioning, (2) facial growth and development, (3) communication, and (4) social and emotional consequences:

(1) Physical Function — The cases available for study had lived to maturation so they obviously had survived the problems of breathing, sucking (eating) and swallowing that are associated with this defect. Other physical functioning appeared quite normal. No information is available on the prevalence of cleft palate in Puerto Rico or on the differential mortality of such conditions, and it cannot even be surmised how many failed to survive. It was the clinical impression of the team that the individuals studied were of average health and physical development when compared with the control group and others in the area. The medical examinations on the 1957 group were essentially negative and, as mentioned earlier, were not repeated on the second group. On questioning these patients seemed to have no more upper respiratory infections than the normal group. The turbinates were usually abnormally enlarged and of a purplish hue, but the eustachian tubes were usually patent and apparently functioning normally.

As far as could be determined clinically these untreated cleft palate cases did not appear to suffer the ailments commonly associated with surgically repaired cases. The health and physical functioning of the untreated group seemed equal to that of individuals with normal palates.

(2) Growth of Face — The facial growth and development of the unoperated cleft palate cases appeared to have progressed on a normal pattern and

Table 3—Distribution by Lip Repair of 47 Cases of Unilateral and Bilateral Oral Clefts—Puerto Rico, 1957 and 1958

	Lip Unoperated	Lip Operated	Total
Unilateral			
Right	2	8	10
Left	4	28	32
Bilateral	1	4	5
Total	7	40	47

achieved near normal skeletal dimensions. The study team saw no external evidence of abnormal facial growth. The dental arches appeared normal, except for the fault itself, and in harmony with the facial pattern.

Radiographically the vertical growth, the anteroposterior growth and the lateral growth of the maxilla or upper jaw, as well as mandibular length and position, were similar in adults with nonoperated cleft palates and normal adults. They did not exhibit the deficiencies of the maxilla sometimes seen, at this age, in cases with an apparent growth interference of the upper jaw.

Visually, there did not appear to be any growth disturbance in the upper part of the face in these patients. Generally, there was no major discrepancy between the upper and lower parts of the face. In the few cases showing some malrelation it was thought to be the genetic pattern of the individual.

The cases of complete clefts involving the lip, alveolar process and palate appeared to exhibit a more normal maxillary dental arch contour when the lip was operated on at a later age than do the cases that have been operated on in infancy.

The tissues of the velopharyngeal area, in these untreated adults, appeared to be much less than normal and gave the impression of some atrophy. This may be atrophy related to dysfunction or malfunction or there may be lack of soft palate tissue at birth. The majority of these appeared to have an insufficiency of soft palate tissue and an inadequacy of soft palate mobility.

(3) Communication—Clinical impressions and a tentative analysis of speech data confirm the statement regarding the similarity in maxillary and mandibular growth between nonoperated cleft palates and normal adults.

Studies in the United States[8] indicate that the anteroposterior dimensions of the oral cavity are shorter in repaired cleft palate groups than in normal subjects. This anteroposterior dimension did not differ significantly from the normal in the unoperated Puerto Rican group.

Tongue length is determined by data for the tongue area during vowel phonation and at rest position. The tongue measurements of the unrepaired cleft palate group appeared to fall within normal structure measurements.

Repaired cleft palate subjects appear to employ the same tongue positioning during phonation as do normal cases. There is some evidence in the unrepaired group in Puerto Rico that the tongue tends to be carried in a much higher position in the oral-nasal cavity. Lack of restrictive structures superiorally to guide the tongue may explain this positioning. Many of the sounds were being made in the unrepaired complete cleft with tongue contact on the superior border of the nasal area.

In repaired cleft palate groups the movement of the posterior pharyngeal wall during vowel phonation is more restricted than in normal groups. In the unrepaired cases in this study, measurements, thus far, indicate average to better than average pharyngeal wall movement for all vowels.

Lip and mouth opening during phona-

Table 4—Distribution by Repair of Palate of 80 Cases of Unilateral, Bilateral and Posterior Oral Clefts—Puerto Rico, 1957 and 1958

	Palate Unoperated	Palate Operated	Total
Unilateral clefts			
Right	4	6	10
Left	23	9	32
Bilateral clefts	2	3	5
Posterior clefts	22	11	33
Total	51	29	80

tion among United States repaired cleft palate subjects, as compared to normal United States subjects,[8] reveals no statistically significant difference. It is somewhat difficult to measure lip opening in unrepaired cases, because of the lack of movement of the superior structures. However, there is an indication, thus far, that the mouth opening (measurement of distance between the mandible and the maxilla) in the unrepaired complete cleft palate group seems to be approaching a wider opening.

Clinically, it was observed that individuals having rather large clefts of the palate frequently exhibited good speech and voice quality. There was much less nasal quality than one would expect when account is taken of the extent of palatal abnormality. The more restricted the cleft, the more positive the judgments of nasality. The individuals who had a complete unrepaired cleft from the lip through the soft palate had ratings of near normal voice qualities; i.e., little if any nasality was observed. This lack of nasality might be explained by the fact that complete clefts with no repair had but one resonating cavity. Individuals who had an unrepaired cleft of the hard and soft palates tended to be judged more nasal, and individuals with a cleft of the soft palate only had a high consistent rating of nasality. The more separation of the oral and nasal cavities, in these cases, the more well defined were the auditory symptoms of nasal quality.

Six well trained speech and hearing personnel have listened to the tape recordings obtained on the Puerto Rican subjects. Quite frequently it is necessary to play the tapes of American patients backward to avoid confusing nasal emission with poor articulation. In view of the fact that the Puerto Rican tapes were in Spanish (which none of the listeners understood) there could have been no adverse effect upon the reliability of judgment. These speech pathologists were listening only to the production of vowel and consonant sounds and not to the correct production of a complete word.

In many instances, the individuals who had complete and wide clefts produced all of the speech sounds except (k) and (g). The production of the (k) and (g) sounds requires the cooperation of the soft palate tissues to produce the plosion in the posterior portion of the mouth. The omission of (k) and (g) sounds for all types of clefts was consistent. The production of speech, however, by clefts of the hard and soft palate posterior to the premaxilla, seemed to be superior to the speech produced by many patients who have had a complete closure of the cleft. It is quite possible that these Puerto Rican patients, who had the opportunity of experiencing more normal facial growth, enjoyed the advantage of good occlusion between the maxilla and the mandible, thus assisting them in the production of the speech sounds.

Although the environment of the hearing tests was not ideal the results may be considered clinically accurate.

Two-thirds of the unoperated cleft palate patients receiving audiometer tests had essentially normal hearing acuity. The one-third registering hearing difficulties was divided equally between monaural and binaural hearing losses. The degree of hearing loss in the monaural group was recorded as mild, 66 per cent; moderate, 22 per cent; severe, 6 per cent; and deaf, 6 per cent. In the binaural group the results were 35, 56, and 11 per cent, respectively, with no patients recorded as deaf.

The monaural hearing loss recorded would have little effect upon ability to learn and reproduce speech sounds. A number of the cases tested were approaching an age level of natural auditory nerve deterioration which tends to increase the per cent of cases with binaural hearing loss.

There were 12 cases needing special assistance with their hearing in regard

to lipreading and speech production. This is a considerably higher proportion than that found among normally-structured individuals. However, when one considers the number of hearing losses obtained on repaired cleft palate cases, this ratio for unrepaired cleft palates is very small.

One might speculate from this preliminary investigation that the postponement of surgical repair of the soft palate tissues appears to be of considerable assistance in maintaining adequate social hearing.

(4) Social Problems—The small exploratory study in Puerto Rico was directed toward gathering from the cleft lip and palate individuals their own perceptions of the consequences during their lifetime of having been so afflicted.

An attempt was made to arrive at data which would help toward an understanding of the types of situations which the afflicted individual faced during his life from infancy to adulthood. Five periods of potential stress were chosen concerning which the individuals were asked about their perceptions. These were: (1) the recollection of early home life, including the present memory of treatment by parents as compared to that given siblings in the home; (2) school life, including difficulties found in relation to teachers and schoolmates; (3) early social life, including desire for, and participation in, children's social activities; (4) job history, including feelings about jobs, and the ease or difficulty of securing and holding jobs; and (5) present social life, including family relations, as well as desire for and participation in community social life.

The following types of analyses will eventually be made: (1) a comparison of treated, untreated, and normal control cases according to the five dimensions noted above; (2) a comparison of the five dimensions for differences between individuals with greater or lesser facial deformity, and greater or lesser speech disturbance after such criteria have been demarcated; and (3) a suggestion of further studies which lead from these frankly exploratory data.

It has been difficult to arrive at anything more than impressions of the data in the time available. However, it looks very much as though the individual born with a cleft palate encounters situations with great social and emotional consequences almost from the beginning, and which continue almost unabated throughout his life.

The cleft palate cases recalled, in adulthood, that they were treated quite differently than their siblings in the home, that they were left alone, rarely punished, and received, in many instances, greater amounts of love than their brothers and sisters. There were very few cases of noted parental rejection. In most cases, these individuals reported being the favored child.

When the child went to school, he seemed to find that again he was treated quite differently from the other children. Thus, he reports that he had far more difficulty in learning the necessary subject matter, especially in learning English, and in reading out loud. He was quite frequently the butt of ridicule by other children in and out of the classroom, and the teachers attempted to protect him from this ridicule. In certain instances subjects reported feeling quite hurt by what they saw as overprotection.

Discussion

It must be stressed that the general findings presented in this paper are based on clinical observations, impressions of the examining team, and some preliminary study of the data. In spite of these limitations several tentative conclusions seem warranted.

These nonoperated cleft palate cases appear to have developed well and to have followed normal facial growth patterns.

The maxillary growth and development in these unrepaired cases appeared to approach that of normal adults more closely than many of the repaired cases. Clinically, the growth of the upper part of the face and of the dental arch was closer to normal in the nonoperated cases than in cases with early surgical treatment of the palate.

Measurements of the unoperated cases indicate better movement of the posterior pharyngeal wall during vowel phonation than was found in repaired cases.

These untreated patients reported no more respiratory illnesses than the control groups and although the turbinates were consistently abnormally enlarged the eustachian tubes were usually patent and apparently functioning normally.

Individuals in the study group had adapted rather well to speech difficulties. All types of palatal clefts consistently omitted (k) and (g) sounds. Unrepaired cases of complete clefts from the lip through the soft palate had near normal voice quality while those with a cleft of the soft palate only had the most nasality. The speech sounds produced by patients with untreated clefts involving the hard and soft palates appeared superior to the speech sounds of patients with surgical closure of the cleft.

Although a higher proportion of the study cases than normal required special assistance with hearing problems, this ratio was lower than that found among repaired cases.

Social and emotional problems, resulting from a speech disorder, a facial deformity, or often from both, develop early in life and continue to plague the individual. However, these people reported that as children at home they were favored over their siblings and at school the teachers tended to protect them and in many instances to be overprotective. The great majority had considerable difficulty in school.

It is estimated that about 250 adults with oral clefts should be available on the Island for study. It is planned to continue the project to locate and collect data on a sufficient number of cases to produce a truly representative sample of this group.

Additional areas for productive investigation, in these groups, are becoming apparent as the data on hand are studied. These areas include: the genetic aspects of oral clefts, results of treatment at different ages and by various methods, speech training problems and a variety of emotional factors.

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Prospective health studies of populations, especially in relation to work environment, are difficult to carry out. Here, a method is proposed for conducting long-term cohort studies through the use of data from the Bureau of Old-Age and Survivors Insurance. A known occupational cancer hazard was confirmed by this method.

METHODS OF STUDYING THE RELATION OF EMPLOYMENT AND LONG-TERM ILLNESS— COHORT ANALYSIS

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A SERIES OF studies has been under way in Ohio to explore existing and new sources of data in an attempt to develop methods of studying long-term illness and employment. In our earlier reports we have shown the classic epidemiologic approach to vital records. The purpose of the present paper is to describe the potentialities of cohort studies involving use of records of the Bureau of Old-Age and Survivors Insurance as a resource in health studies. The significance of this source of data can be readily appreciated from the fact that it includes work history and related records for over 100 million persons in the United States who are covered by the Old-Age, Survivors and Disability Insurance program.

Need for Industrial Cohort Studies

Studies of industrial population groups have been directed for many years primarily to the "current employees" of the plant, i.e., individuals working during the time the health study was being conducted. The investigations were often prompted by an "outbreak" of a pattern of symptoms among a group of employees due to some excessive exposure to toxic dusts, fumes, mists, or gases. These studies frequently did not include employees who had left the plant because of illness, or others who had left, presumably well, after prolonged exposure and subsequently developed the disease complex.

When one considers the hundreds of chemicals and their possible combinations which have occurred in industry in various forms, for which only limited toxicological information is available, the potential human effects constitute a broad, formidable problem. More significant, however, is the comparative lack of toxicological data on the effects on human beings of low concentrations of toxic substances over a prolonged period of time, and the problem of the long latent period, which has been recognized for relatively few diseases. These considerations represent an area which requires many approaches — demographic, retrospective, and particularly prospective or "forward" studies of selected cohorts—to ascertain effects on

various systems of the body of occupational exposures which are not as yet detected or recognized. Associated with the problems of the latent period and low exposure over a long period of time has been the absence of adequate sensitive organ function tests for the physiological testing of the chemical effects of low concentrations among exposed workers.

Research developments and observations derived from industry investigations may divulge significant leads or establish a sufficient basis for the postulation of hypotheses relative to cause and effect following exposure of worker groups to certain chemicals. Frequently such developments occur years after the original investigation or research relating to a certain chemical has occurred, such as the relation of lung cancer and berylliosis. The need, then, is expressed to test by epidemiologic means the leads and hypotheses derived from laboratory research and plant investigations among population groups exposed over a sufficiently long period of time to particular manufacturing processes or chemicals.

In the consideration of health problems associated with occupational exposure, questions have frequently arisen as to how various cohort industrial population groups, differing primarily in the working environment exposure, vary among each other in terms of life expectancy and cause of death patterns. The health and socioeconomic implications of the questions are readily apparent. There has, however, been a basic problem of developing an approach which will enable the observation and follow-up of particular industrial population groups, with identifying characteristics, over a period of many years.

There have been inherent, almost insoluble, problems in the development of such longitudinal or forward studies of selected cohorts. The absence of adequate records covering some 20 prior years, with identifying population characteristics and employment exposures, has constituted the broadest obstacle. Industry personnel records, which are often incomplete or not uniform, are frequently destroyed after a period of years. Employee migration and changes of employment represent the other aspect of this problem. These factors, together with the cost of tracing employees, or even getting accurate work history data from employees who are available for response, have contributed to the essential difficulty of establishing industrial cohorts in a given period of time and observing these groups during a prolonged period of time. It may be possible to overcome these problems and to determine and compare the death patterns of cohort groups in many different industries through the use of Bureau of Old-Age and Survivors Insurance (BOASI) data.

Description of BOASI as a Source of Data

In the study of a particular population group or a specific cause of death in which employment represents a characteristic under evaluation, the source data of the BOASI have important potentialities. Exploration of Social Security employment data in cancer research projects has been under way in Ohio since 1949. Interest in BOASI data was prompted by: (1) the limitations of data referring to "usual" occupation or industry as recorded on the death certificates, (2) the difficulty of obtaining accurate employment history data from informants or family representatives, (3) the frequent changes of employment by workers, (4) multiple employments in the same period, and (5) the importance of the latent period of disease as may be reflected in different employment exposures over a period of years.

During the past 22 years additional persons have been brought under the Old-Age, Survivors and Disability Insur-

ance program. Under the 1935 Social Security Act, the coverage of Old-Age and Survivors Insurance through employer and employee deductions was restricted primarily to workers in industry and commerce. Successive amendments extended coverage so that by the end of 1955 there were wage records for about 110 million Social Security accounts. By the end of 1958, there were records for about 120 million accounts, since coverage became almost universal through the extension of protection of the program to additional persons and at the same time, disability benefits were added to the Old-Age and Survivors Insurance program in 1956 for persons aged 50-64.

The records of the BOASI include a variety of information. Individual accounts are kept by Social Security number and name of each wage earner covered by the Social Security Act. Also available for each individual is a record of any self-employment income he may have reported; the calendar quarters in which he was employed; the names and addresses of his employers; the employers' identification numbers; four-digit industrial classification codes; the worker's date of birth, sex, and color, and other types of data. When a survivor's benefit claim is made on the account of the deceased wage earner, the Baltimore office of BOASI maintains a record of the district office in which the claim was filed (usually the place of death), the date the claim was filed, and the alleged date of death. The payment centers of the BOASI maintain the proof of death as a valid basis for the payment of Social Security benefits.

Individual employer records are identified by number, and information on the current industrial activity and geographic location of the employer and his plants is maintained. Since quarterly reports furnishing the employment data on each employee are generally recorded under the appropriate employer identification and establishment number, selection and identification of each employee can usually be made by geographic area and industry type. In addition, the data about sex, color, age, and other characteristics of the employee can be included on a single record.

In essence, the BOASI source data, by recording all changes of covered employment and duration of employment, even showing geographic location, provide a solution to the problem of employee migration, the uniform coding of employment, and the accurate determination of periods of employment after 1936.

For investigators acquainted with the great variety of industrial operations and the difficulties associated with coding industries in different states, this source provides a uniform classification available without further expenditure of time or effort for this purpose. In this procedure the variation in the observer (investigator) interpretation in obtaining and classifying employment life history data is reduced to the minimum by reference to a single source, national in scope. This meets one additional requirement of a study, i.e., reproducibility of the same conditions, in that the employment data can be reproduced by another investigator from the same source and the observations retested for any group of individuals for any cause of death.

Method of Study

Longitudinal studies of selected cohorts may be conducted by the use of BOASI statistical tabulations to establish mortality patterns for specific industrial population groups in an economical manner and relatively short period of time. In the present study, working under special authority of the commissioner of social security regarding confidentiality of records, the BOASI records were used to demonstrate the possible development of a forward study of a selected industrial cohort to determine (1) whether an epidemiologic lead could be derived util-

izing the BOASI source data without recourse to company information, and (2) whether this lead would be substantiated by company source data.

The company selected for the demonstration is located in a county in Ohio in which a high death rate for bladder cancer existed. The company has been engaged for many years in the manufacture of beta-naphthylamine, a known carcinogenic agent, and benzidine, a highly suspected carcinogenic agent. Officials of the company acknowledged an occupational cancer hazard.

In the Social Security approach to the cohort study, a request was made to the BOASI for them to tabulate special statistics for us, on a cost-of-service basis, for the population employed in Company A at any time in the year 1937. The distribution of the total number of employees of Company A in 1937 was provided to us according to birth date, sex, and color, and this information established the cohort to be followed through 1956. In the next procedure the BOASI forwarded to us the names of the employees who were part of the 1937 cohort population and had died since 1937 with a claim filed for survivors insurance benefits. Such records for deceased individuals may be released under proper arrangements for safeguarding their confidentiality. On each of these deaths the BOASI provided certain other identifying data: the name of the deceased, the Social Security account number, date of birth, sex and color, date and place where the death claim was filed, name and address of each employer since 1937, inclusive quarters of employment, company BOASI number, and company industrial classification code. From the basic source data, causes of death were established by use of death certificates obtained from the various state divisions of vital statistics where the death claims were filed. Death patterns were then established for the 1937 cohort population of Company A.

A cohort study of mortality patterns was conducted in a similar manner for the same basic population of the company by follow-up of plant records. From the company personnel records, the plant population of 1937 was established and identifying data recorded on each employee of that year. The company "insurance book" provided leads for follow-up of sick employees for whom medical and surgical benefits had been paid. This book listed the names of those who received medical or surgical care, the names of the doctors and hospitals, the amount paid, and the type of problem or diagnosis. This information was of considerable help in providing the initial lead to medical sources of information about the employees. Contacts were also made with employees, members of their families, and fellow workers. In this manner much information was obtained on deceased employees, as well as employees who had been treated for cancer of the bladder, or other illnesses, and were still alive. It was not possible to trace all the employees of 1937 from the company data; therefore the data do not represent all the deaths or all the cases of bladder tumors that have occurred. When employees had died, death certificates were obtained from the state in which death occurred.

For purposes of analysis, person-years of observation were computed by color and age for the period covered by the study, 1937-1956, for male employees in the plant cohorts established by the two sources of data. This computation involved counting one year of observation for each person for each year of the study. Employees who died were counted for one-half year in the year in which they died, and no person-years were recorded for the period after their death. Each person-year of observation was counted by the age of the person at the time. Thus, a person who was 25 in 1937 was counted as 25 in that year, 26 for the year 1938, 27 for the year

1939, 28 for the year 1940, and so on.

Mortality rates were computed by color and age, as well as by major cause of death and color, for males 25-64 years of age in the company cohorts, and among residents of Ohio during the period 1950-1956. The data on person-years of observation were used in computing death rates for the company cohorts, and population data in the 1950 United States Census were used in determining Ohio death rates. Expected deaths were also determined, by color, for specific types of heart disease and cancer among the company cohorts. This was done by applying the Ohio death rates during the years 1950-1956 for the specified cause in each color and age group to the corresponding color and age group in the person-years of observation. Resulting expected deaths were compared with observed deaths in the age span 25-64 years, classified by color.

Findings

Table 1 brings out the fact that BOASI records on employment were more complete than plant records. Incompleteness is generally a problem in working with plant records, which may affect the death rates derived. The age distribution of the males in the company population in 1937, as shown by the two sources of data, indicates that the plant records of employees were particularly incomplete for the younger ages. There is also some evidence in the distribution of deaths during the study by year and age (Tables 2 and 3) that mortality data obtained from the plant records were relatively incomplete in the years before 1950, and in the 25-44 year age group. The pattern of deaths by year may be a reflection of changes in employment practices and turnover relating to whites and nonwhites, as well as the delayed effect of the latent period.

Tables 4 and 5 provide mortality rates for the company cohorts of males by both sources of data compared with the state of Ohio. It will be noted that the mortality rates were lower for each of the company cohorts than for Ohio, especially among the nonwhite males. The excess for Ohio among the white males was concentrated in the 45-54 year age group. In contrast, there was an excess mortality rate for the company cohorts compared with Ohio among the

Table 1—Number of Male Employees of Company "A" in 1937, Ages 15–64, Classified by Color, Age, and Source of Data

Color	Age in 1937				
	15–64	15–24	25–44	45–54	55–64
	BOASI Records				
Total	609	114	361	85	49
White	485	103	271	70	41
Nonwhite	124	11	90	15	8
	Plant Records				
Total	445	65	265	69	46
White	364	60	206	59	39
Nonwhite	81	5	59	10	7

Table 2—Number of Deaths, 1937–1956, Among a Cohort of Male Employees of Company "A" in 1937, Ages 25–64 Years at Death, Classified by Color, Year of Death, and Source of Data

Color	Total 1937–1956	Year of Death				
		1937–1939	1940–1944	1945–1949	1950–1954	1955–1956
	BOASI Records					
Total	75	7	16	24	18	10
White	56	5	13	16	15	7
Nonwhite	19	2	3	8	3	3
	Plant Records					
Total	57	3	12	17	17	8
White	45	2	9	14	14	6
Nonwhite	12	1	3	3	3	2

white males of the 55-64 year age group. Comparison of death rates by major cause among the white males shows that mortality due to heart disease was relatively low and for malignant neoplasms was relatively high in the company cohorts compared with the state of Ohio.

The lower rates for the company cohorts as shown by the two sources of data bring out a problem of obtaining complete mortality data for studies of particular companies. Use of Social Security records presents a special problem in connection with incomplete identification of deaths. When claims for survivors benefits are not filed either because of lack of eligibility for benefits or lack of knowledge of availability of Social Security benefits, some records of deceased persons are not identified. These factors have become relatively less significant in recent years and are likely to decrease still further with time. The low rates found by the plant study represent a problem of incompleteness of plant records and the follow-up study conducted. Also, use of rates for Ohio during the years 1950-1956 probably somewhat overestimates expected deaths due to cancer and some other long-term illnesses. It might be noted that the understatement of deaths by Social Security and plant records strengthens the importance of the excess found for cancer among the white males of the company cohorts compared with Ohio.

Tables 6 and 7 on mortality due to heart disease and malignant neoplasms

Table 3—Number of Deaths, 1937–1956, Among a Cohort of Male Employees of Company "A" in 1937, Ages 25–64 Years at Death, Classified by Color, Age, and Source of Data

Color	Age at Death			
	25–64	25–44	45–54	55–64
	BOASI Records			
Total	75	17	23	35
White	56	12	13	31
Nonwhite	19	5	10	4
	Plant Records			
Total	57	10	17	30
White	45	7	10	28
Nonwhite	12	3	7	2

bring out the fact that there was an excess mortality from bladder cancer in the company cohorts compared with Ohio that was considerably greater than for any other specific type of cancer or heart disease. The excess was detected by both the BOASI and plant records. There were also other bladder tumors observed among living members of the BOASI and plant cohorts. Nine living plant employees who had been exposed primarily to benzidine manufacture and subsequently developed bladder tumors were recently awarded compensation following a supportive appeal by the company. The cohort method of studying mortality patterns also demonstrates other suggestive leads that may be derived relative to other organs, such as cancer of the pancreas in this case (Table 7).

Discussion

Variations in death patterns observed in forward studies of selected cohorts provide epidemiologic leads as to the effects on various organ systems of the body which may be associated with employment exposures over a prolonged period of time. The use of BOASI source data makes longitudinal studies of selected cohorts possible in all industries without extensive preparation or personnel and within a reasonable cost. Cohorts of the same industry and employer may be selected in different time periods, such as 1937, 1947, and 1957, in order to test the effect of changes in manufacturing processes or exposures.

It is possible to screen from the listing of individual companies under the industrial classification of BOASI source data

Table 4—Average Annual Death Rate per 100,000 Males Among a Cohort of Employees of Company "A" in 1937 Followed Through 1956 and Among Ohio Residents, 1950–1956, Classified by Color, Age, and Source of Data

Color	Age Group				Age Adjusted Rate*
	25–64	25–44	45–54	55–64	25–64
	Company Cohort-BOASI Records				
Total	737.35	291.12	814.30	2,321.72	766.68
White	695.91	257.90	598.80	2,534.75	734.94
Nonwhite	894.33	421.41†	1,530.22	1,405.98†	847.52
	Company Cohort-Plant Records				
Total	769.13	247.68	810.49	2,351.10	745.06
White	748.01	212.25†	607.53	2,611.94	723.26
Nonwhite	860.22	405.68†	1,550.39†	980.39†	768.16
	Ohio Resident Death Certificates				
Total	849.75	288.58	1,033.61	2,362.33	822.42
White	812.41	262.50	974.93	2,283.08	779.57
Nonwhite	1,363.07	625.55	1,797.24	3,834.80	1,455.98

* Age adjusted by the direct method on the basis of the total population of continental United States, 1950.
† Rate is based on less than 10 deaths.

Table 5—Average Annual Age Adjusted Death Rate per 100,000 Males Among a Cohort of Employees of Company "A" in 1937 Followed Through 1956 Among Ohio Residents, 1950–1956, Classified by Major Cause of Death, Color, and Source of Data

Cause of Death (and Cause of Death Code)	Age Adjusted Rate,* Ages 25–64		
	Total	White	Nonwhite
	Company Cohort-BOASI Records		
Total All Causes	766.68	734.94	847.52
Heart disease (410–443)	231.38	217.80	278.42†
Malignant neoplasms (140–205)	190.21	189.25	181.82†
Accidents (E800–E962)	80.97†	101.73†	0.00
All other	264.11	226.16	387.26†
	Company Cohort-Plant Records		
Total All Causes	745.06	723.26	766.16
Heart disease (410–443)	237.54	233.95	237.85†
Malignant neoplasms (140–205)	180.97	177.40	151.93†
Accidents (E800–E962)	83.69†	102.54†	0.00
All other	242.86	209.37	378.38†
	Ohio Resident Death Certificates		
Total All Causes	822.42	779.57	1,455.98
Heart disease (410–443)	334.84	327.63	445.20
Malignant neoplasms (140–205)	136.80	132.03	212.42
Accidents (E800–E962)	76.90	73.80	121.02
All other	273.88	246.12	677.33

* Age adjusted by the direct method on the basis of the total population of continental United States, 1950.
† Rate is based on less than 10 deaths.

those which by some other factors would be more suitable in the testing of an hypothesis relative to a "suspected" chemical or manufacturing process. A manufacturing process may be "suspect," and it is possible then to select industries engaged in the specific type of manufacturing process. A lead derived from clinical observations, research, or epidemiologic studies in a single industry can be extended and tested in a larger group of the same industry type. The BOASI source data provide a possible means of removing one of the most serious obstacles to epidemiologic studies, obtaining a large enough population group similarly exposed to the "suspected" causative environmental agent.

For the application of the selected cohort studies using BOASI data particular care should be given to the choice of the industry to be studied. The BOASI records contain the industry classification and, although refined by a four-digit code, still must be considered as a broad category for study. Since industries represent a series of different departments and processes, the abnormality of a particular department would have to be overwhelming in order to in-

fluence the over-all industry rate. However, there are many industries of smaller size, of the same type, engaged in the manufacture or processing of specific substances in which the population over a period of years would reflect the health hazards of the plant. The geographic area, size of the plant population, years in operation, and the predominance of specific chemicals or processes are important in attempting to refine the factors associated with a particular industry type. If one focuses on the industries identified by four digits in the Standard

Table 6—Observed and Expected* Deaths Due to Heart Disease Among a Cohort of Male Employees of Company "A" in 1937 Followed Through 1956, Ages 25–64 Years at Death, Classified by Type of Heart Disease, Color, and Source of Data

Type of Heart Disease (and Cause of Death Code)	Total		White		Nonwhite	
	Observed Deaths	Expected Deaths	Observed Deaths	Expected Deaths	Observed Deaths	Expected Deaths
	BOASI Records					
Heart Disease (410–443)	23	34.85	17	25.71	6	9.14
Chronic rheumatic heart disease (410–416)	0	1.88	0	1.48	0	0.40
Arteriosclerotic heart disease (420)	15	25.65	13	20.45	2	5.20
Chronic endocarditis not rheumatic (421)	0	0.36	0	0.24	0	0.12
Other myocardial degeneration (422)	2	1.47	1	0.91	1	0.56
Other diseases of the heart (430–434)	3	1.35	3	0.77	0	0.58
Hypertension with heart disease (440–443)	3	4.14	0	1.86	3	2.28
	Plant Records					
Heart Disease (410–443)	19	27.22	15	20.88	4	6.34
Chronic rheumatic heart disease (410–416)	0	1.43	0	1.16	0	0.27
Arteriosclerotic heart disease (420)	13	20.24	12	16.62	1	3.62
Chronic endocarditis not rheumatic (421)	0	0.27	0	0.19	0	0.08
Other myocardial degeneration (422)	1	1.14	0	0.75	1	0.39
Other diseases of the heart (430–434)	3	1.02	3	0.62	0	0.40
Hypertension with heart disease (440–443)	2	3.12	0	1.54	2	1.58

* Expected deaths were computed on the basis of the sex, color, and age specific mortality rates for the specified type of heart disease for the state of Ohio in the period 1950–1956.

Table 7—Observed and Expected* Deaths Due to Malignant Neoplasms Among a Cohort of Male Employees of Company "A" in 1937 Followed Through 1956, Ages 25–64 Years at Death, Classified by Site of Neoplasm, Color, and Source of Data

Neoplasm Site (and Cause of Death Code)	Total		White		Nonwhite	
	Observed Deaths	Expected Deaths	Observed Deaths	Expected Deaths	Observed Deaths	Expected Deaths
	BOASI Records					
Malignant Neoplasms (140–205)	18	14.60	14	10.30	4	4.30
Buccal cavity (140-148)	0	0.51	0	0.38	0	0.13
Esophagus (150)	1	0.60	1	0.29	0	0.31
Stomach (151)	1	1.56	1	0.95	0	0.61
Large intestine (153)	1	1.17	1	0.91	0	0.26
Rectum (154)	1	0.71	1	0.54	0	0.17
Pancreas (157)	3	0.72	2	0.50	1	0.22
Larynx (161)	0	0.25	0	0.18	0	0.07
Lung and bronchus (162–163)	3	3.46	3	2.49	0	0.97
Breast (170)	0	0.02	0	0.02	0	0.00
Prostate (177)	0	0.61	0	0.32	0	0.29
Kidney (180)	2	0.36	1	0.27	1	0.09
Bladder (181)	6	0.41	4	0.30	2	0.11
Brain and other parts of central nervous system (193)	0	0.59	0	0.49	0	0.10
Lymphatic and hematopoietic tissues (200–203, 205)	0	0.90	0	0.69	0	0.21
Leukemia and aleukemia (204)	0	0.63	0	0.49	0	0.14
All other	0	2.10	0	1.48	0	0.62
	Plant Records					
Malignant Neoplasms (140–205)	14	11.39	11	8.38	3	3.01
Buccal cavity (140–148)	0	0.40	0	0.31	0	0.09
Esophagus (150)	1	0.46	1	0.24	0	0.22
Stomach (151)	0	1.21	0	0.78	0	0.43
Large intestine (153)	1	0.93	1	0.75	0	0.18
Rectum (154)	1	0.56	1	0.44	0	0.12
Pancreas (157)	3	0.56	2	0.41	1	0.15
Larynx (161)	0	0.20	0	0.15	0	0.05
Lung and bronchus (162–163)	1	2.71	1	2.03	0	0.68
Breast (170)	0	0.02	0	0.02	0	0.00
Prostate (177)	0	0.49	0	0.28	0	0.21
Kidney (180)	1	0.28	1	0.22	0	0.06
Bladder (181)	6	0.33	4	0.25	2	0.08
Brain and other parts of central nervous system (193)	0	0.45	0	0.38	0	0.07
Lymphatic and hematopoietic tissues (200–203, 205)	0	0.69	0	0.55	0	0.14
Leukemia and aleukemia (204)	0	0.48	0	0.38	0	0.10
All other	0	1.62	0	1.19	0	0.43

* Expected deaths were computed on the basis of the sex, color, and age specific mortality rates for the specified cancer site for the state of Ohio in the period 1950–1956.

Industrial Classification Manual* it is possible to select industries with well defined processes and exposures, and forward comparative studies of these groups would prove useful for specific or different time periods.

An important problem that persists in industrial work history studies is the difficulty in determining what particular employment in a whole life's work, in what previous time period, may be an etiologic factor in the development of a particular disease. This is associated, too, with the age at exposure and the question of multiple, intermittent, and successive employment exposures. The duration of employment has a direct bearing on the development of a disease related to occupational exposure, and this information is available in the application of BOASI source data to industrial health studies.

In studying the relation of employment and long-term illness one is concerned with a number of complex analyses associated strictly with industrial employment, such as types, durations, and changes of exposures. At the same time, the other factors in the life of an employed worker, which actually involve a considerable portion of time, must also be given attention in industrial epidemiologic studies because of their possible separate or related effects. Specifically, there are such forces as the home situation, community life, including air pollution, and, in general, the social and cultural characteristics which may be related to the industrial status. Approaches on many fronts, singly or in combination, are desirable.

Conclusion

A method has been proposed for conducting long-term cohort studies of industrial population groups through the use of BOASI data in conjunction with vital records. The BOASI source data provide a means of accurately determining long-term work histories since 1937 for industrial cohorts.

The confirmation in this study of a known occupational cancer hazard through the use of BOASI and plant records paves the way for further exploration of the use of Social Security source data as well as methods of studying population groups.

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Preventive Medicine a Science

"A blundering art until thirty or forty years ago, preventive medicine was made a science by the discovery of the causes of many of the serious epidemic diseases. To any one of you who wishes to know this side of science, what it is, what it has done, what it may do, let me commend Radot's 'Life of Pasteur' which reads like a fairly tale. It is more particularly in connection with the great plagues of the world that man's redemption of man may be in the future effected; I say in the future because we have only touched the fringe of the subject. How little do we appreciate what even a generation has done. The man is only just dead, Robert Koch, who gave to his fellow men the control of cholera. Read the history of yellow fever in Havana and in Brazil if you wish to get an idea of the powers of experimental medicine; there is nothing to match it in the history of human achievement."—(William Osler: Man's Redemption of Man. Constable & Co., London, 1910.)

Problems of behavior in school children do not occur suddenly. Their roots not infrequently lie in the preschool period and must be detected if constructive action is to be taken. This is the theme of this paper based on the experience of a pilot clinic for school children with emotional problems in the District of Columbia.

BEHAVIOR DISTURBANCES OF SCHOOL CHILDREN IN RELATION TO THE PRESCHOOL PERIOD

Ella Oppenheimer, M.D., F.A.P.H.A., and Margaret R. Mandel, M.A.

THE NEED FOR SERVICES to school children with emotional problems was long known in the District of Columbia. Existing community social and mental health resources were too limited to provide additional services in this area. Nor was it at all clear that such resources were the only answer to this need.

The School Health Services' Psychiatric, Diagnostic and Counseling Clinic —a limited pilot project, staffed by a part-time psychiatrist and a full-time clinical social worker—was set up to provide service with a broad approach for school children with emotional problems. Its purpose was twofold:

> First, to provide diagnostic services for a certain number of students with emotional difficulties; second, to confer with school personnel and other interested parties in an attempt to learn more about the individual children from them and to provide them with information and advice which might result from our study of the child. Thus, we hoped to provide services for the patients and also provide a type of education and counseling for the school personnel who are concerned with the care of so many students.*

* Olshaker, Bennett. Pediatric Psychiatry in a School Health Services Program. (To be published.)

Referrals to this service were made by school personnel, public health nurses, physicians, and parents through the principals of public and parochial schools. The school shared with the clinic information about the family, the child's behavior, and their efforts to help him. Physical examinations when needed were given by the pediatrician in the Diagnostic Clinic for School Children of the Bureau of Maternal and Child Health and other special examinations were furnished by this bureau's Handicapped and Crippled Children's Services. Psychological examination was provided through the Department of Pupil Appraisal of the Public Schools and where, because of pressure of work in this department, it was not available the service was provided by psychologists attached to other divisions of the Bureau of Maternal and Child Health. For each referral the social worker collected all available information from school personnel, school health personnel, and the schools' Department of Pupil Appraisal. At a weekly intake conference attended by the psychiatrist, pediatrician, social worker, and public health nurse, the information for each referral was reviewed and a decision

reached either to accept the child for study, to refer him elsewhere, or to acquire additional information from other resources before reaching a decision.

When the decision was made to accept the child for study, the social worker contacted the parent and arranged for a preliminary social interview. At this time the parent was given an appointment to return with the child for a diagnostic interview with the psychiatrist. Prior to this diagnostic interview, arrangements were made for the psychological testing of the child and for such other medical examination and laboratory procedure as might be indicated. At the time of the psychiatrist's diagnostic interview with the child, the social worker had a more intensive interview with the parent. Following the completion of these studies the collected information was reviewed at a weekly evaluation conference conducted by the psychiatrist, to which all professional personnel concerned with the child, including the school personnel (principal, teacher, counselor), public health nurse, and community agency personnel were invited and encouraged to participate. In this conference the social history and results of the physical, psychological, and psychiatric examinations were presented. School personnel and agency representatives added to the total knowledge about the child and entered into the discussion of plans to help him. The social worker saw the parent (parents) or guardian again following the conference to interpret the clinic's diagnostic findings and suggest ways in which the parent could help the child. In situations where special help was recommended, such as individual psychotherapy or family counseling, the social worker, after discussing it with the parents, helped them in using community resources.

From its inception in the fall of 1955 through July 31, 1957, 154 children were seen at the unit and evaluation conferences had been completed on 126. The reasons for which these children were referred, grouped in rather broad categories, were behavior disturbing to the school (30 per cent), antisocial behavior (18 per cent), withdrawn behavior (13 per cent), poor school performance (11 per cent), somatic complaints (9 per cent), sexual misconduct (7 per cent), miscellaneous (12 per cent).

The diagnostic bases for these behavior problems are difficult to categorize. For some children the difficulty centered around their relationships with other significant individuals. For others, the difficulty centered around the handling of aggressive and sexual drives. For 20 per cent of the children organic nervous system difficulties were felt to be a significant factor in accounting for their misbehavior, and for 4 per cent mental retardation was felt to be a major factor in the behavior difficulty. The recommendations that evolved from these studies and conferences were multiple. For 60 per cent of these children psychiatric therapy was recommended. For another 20 per cent referral to a social agency in the community was recommended. These recommendations could be followed through in less than 10 per cent of the cases because of the limited facilities in the community. Thus the unit's major effort, as anticipated, was directed (1) toward helping the school personnel to understand the child, suggesting ways in which they could help him pending further definitive treatment, including school placement—such as change of school, change of teacher, special class placement, etc. (there were 100 recommendations regarding placement in school), and (2) toward suggesting to parents ways in which they might change their methods of handling the child to alleviate his problem situation.

There is no statistical evidence of the effectiveness of these necessarily limited measures for helping the teachers and

parents to utilize their own resources in dealing with the problem situation directly. However, the reaction of school personnel to these conferences was of interest. Some came with "a chip on the shoulder" apparently expecting to be told what to do or to be criticized for their handling of the child. They found an accepting and permissive atmosphere where they were encouraged to express their views and where their views were given due consideration and weight. One principal remarked that this was the first experience she had had in a conference of this sort where consideration was given to her problems. Of interest also was the change in attitudes of school personnel toward the child after attending a conference. One school representative reported that she had come to the conference determined to have the child excluded from school, but had left with a willingness to reconsider this. In another conference the counselor was very critical of the child and was unable to give much information about her except that she was a "pathological liar." By the end of the conference this counselor had a different viewpoint and wanted to do whatever she could to help the girl. These few examples give some indication of how the conference helped to give school personnel a better understanding of the child and his problem situation, helped change their attitude toward the child and his family, and induced them to give more thought to what they might do themselves to help the child in school. Perhaps the best evidence that this experience was helpful was the increased attendance of school personnel at evaluation conferences as the project progressed. But was this in turn helpful to the particular child and his problems? At least 40 parents stated voluntarily that their respective children had shown improvement by the time these parents came to receive the report of the evaluation conference.

There is little objective evidence that similar though limited services to parents, provided through the medium of social interviews and interpretation conferences, were also helpful to the child's school situation. This service was known to be inadequate and there was no follow-up. Nevertheless, it was the feeling of those engaged in this service that it was potentially helpful. In addition there was the "spontaneous" improvement noted previously which could be a reflection of a change for the better in parental attitudes. It was our feeling that the results appeared to justify this type of service, but with more adequate provision for social casework.

But, what about the possibilities of prevention? Was there evidence in these cases of an early origin of the problem and that these children could and should have been helped earlier? With this in mind, a detailed review and analysis was made of 60 case records selected from the total group of children evaluated. Seventy case records were initially reviewed for this analysis; 50 were selected alphabetically and at random from the files and an additional 20 were selected by the social worker or psychiatrist of the School Health Services Psychiatric Counseling Clinic because of their recollection that the histories indicated the time of onset of the problem in the child. In the 60 histories which form the basis of this report there was a definite statement, either in the information furnished by the school or in the social history obtained from the parent or guardian, regarding the duration of the problem. Had sufficient information been available in the other ten records there would probably have been a higher percentage of histories indicating the onset of the problem in the early years. There were significant reasons for lack of information in the ten histories analyzed, but not included, such as parents who were unable to admit that the child presented a problem, working mothers who were too involved in their own problems to

Table 1—Time of Onset of Problem by Age of Children When Studied

Age When Studied	Total	Time of Onset of Problem			
		Preschool	Kindergarten	1st Grade	2nd Grade
All ages	60	32	20	5	3
5	4	3	1		
6	8	4	3	1	
7	9	2	6	1	
8	5	4			1
9	8	6	1		1
10	6	1	4	1	
11	2		1	1	
12	2	1	1		
13	2	1			
14	7	4	2	1	1
15	3	2	1		
16	3	3			
17	1	1			

be aware of their children's difficulties, children cared for by relatives or foster parents who were unaware of early history, frequent changes of foster homes, and early histories dimmed by the immediacy and explosiveness of adolescent behavior.

The study was focused on two main issues: (1) the age at which the emotional problems originated in these children, and (2) preventive potentialities. Table 1 lists the ages of the children studied and their ages when the social history indicated that the problem was recognized by the parents or the school. From this it is clear that the emotional problems of these children can be traced to the early years of childhood. For the group of 60 as a whole the time of onset was stated to be in the preschool period in 32 cases, in kindergarten in 20, the first grade in five, and the second grade in three. In 38 of the 40 children ten years of age and under and 19 of the 20 children between 11 and 17 years of age, the problem was noted in the preschool, kindergarten, or first grade period.

Contributing factors of organic origin which could have been identified in the preschool period were found in 14 of these children. If adequate help had been available and proper school placement possible as early as kindergarten the serious difficulties some of this particular group of children were having might have been avoided. A child with brain damage or other organic problems that result in learning or behavior difficulties needs special handling, but if the condition is not diagnosed early the mother through lack of understanding may begin to feel frustrated and emotional problems which further handicap the child are likely to develop. Mental retardation was not a significant factor in this group of children, indeed one of the 14 was considered to have superior intelligence.

Again, many situations were uncovered where early recognition and help might have averted serious problems. This becomes evident as family constellations and relationships are reviewed. A brief summary of the living arrangements of these children and of the marital situa-

tion of the parents is presented in Table 2. From this it is evident that the majority of these children grew up under socially and emotionally handicapping conditions. The marital problems cited were usually of long duration and separation came after long periods of tension. There were only 14 children living with both natural parents where the parents seemed to have fairly good relationships with each other and where the fathers were able to spend at least a fair amount of time with the family. Although seven of the nine children who had a stepparent had a fairly good relationship with this parent the family situation had presented many problems in the child's early life. There were 10 among the 36 children who lived with two parents where the father was described as quiet, not giving much attention to the children, disturbed, or unable to discipline—in other words a weak masculine figure in the family constellation—and in the three cases where there was only the father in the home all three fathers were described as disturbed individuals. Eleven of the mothers where both parents were in the home were described as immature, inadequate, inconsistent, or disturbed and five of the mothers among the 12 where there was only the mother in the home were described in this same way. Forty-two of the 51 children living with one or both parents were recorded as having disturbed relationships with the parents or siblings.

However, not all families had a history of serious marital conflicts and not all the parents had serious personal problems. There were some with good family structures, stable relationships, and adequate income where the parents were

Table 2—Living Arrangements of Children and Marital Situation of Parents

Living Arrangements in Home	No. of Children	Marital Situation of Parents
Two parents in home	36	
Both natural	27	In 8 serious marital tensions, with father seldom home in 2; in 5 father seldom home because of nature of work; in 14 no serious marital problems recorded and father able to spend time at home.
Stepfather and natural mother	6	In 1 serious marital tensions; in 5 no serious marital problems recorded and father able to spend time at home.
Stepmother and natural father	3	In 1 serious marital tensions; in 2 no serious marital problems recorded and father able to spend time at home.
One parent in home	15	
Mother only	12	In 3 father deceased; 8 parents separated or divorced; 1 mother never married.
Father only	3	In 3 parents separated or divorced.
Adult other than parent	9	
Grandparent	5	Natural parents unable to care for children, described as irresponsible, inadequate, promiscuous, alcoholic, or cruel (5 children seriously neglected in early life and 2 still poorly cared for).
Aunt	1	
Foster parent	3	

free enough from social and emotional problems to be able to give the attention and care needed. In this type of family, however, there were still indications of need for services to prevent difficulties that arise in certain stages of the child's development. The histories of the children studied showed frequent indications of poor handling of such normal behavior as jealousy of a new baby, thumb sucking, handling of the genitals, angry feelings toward parents. There were also instances of serious difficulties around feeding and toilet training and anxiety around the care of a newborn baby. These are the types of situations that can frequently be handled through counseling or through anticipatory guidance even before there is any indication of problems.

In summary, these findings corroborate what has been expressed over and over by those professions engaged in helping children in trouble. The problems do not suddenly occur. It appears clear that if the problems of adjustment of children in school are to be planned for constructively, provision must be made for recognizing emotional disturbances and their background of tensions in the parent-child relationships in the preschool period and for dealing with them constructively. An aggressive effort should be made to develop ways and means of providing services to meet these needs.

For the community preschool child health clinics where large numbers of young children are receiving health supervision and guidance, augmenting the basic pediatric and public health nursing services with social casework, psychological, and psychiatric consultation would appear to be a sound starting point. The key role of the pediatrician and the general practitioner whether seeing young children in private practice or in child health clinics in a preventive program should be emphasized, for it is in the first few years of life that children are seen medically on a more regular basis for preventive medical purposes than at any other period of their lives. This gives the physician apportunity for firsthand observation of parent-child relationships and of situations indicating actual or possible danger signals in these relationships, such as the mother's attitudes, the child's behavior, or serious marital or other personal and family problems. Much preventive work can be done by the physician through interpretation, counseling, and supporting help given to a worried, overburdened, and misinformed mother. But in other situations as shown in this study parents need special or prolonged services which the physician is not able to give, such as intensive help with marital problems, difficulties in relationships, and personal and financial problems. This makes it important that the physician, especially in private practice, be acquainted with services offered by social agencies in the community so that he can make appropriate referrals, and that he participate in community action to develop or augment the community social services needed for an effective preventive program for these children.

Dr. Oppenheimer is chief and Miss Mandel is consultant in psychiatric social work, Bureau of Maternal and Child Health, Department of Public Health, Washington, D. C.

This paper was presented before the Maternal and Child Health Section of the American Public Health Association at the Eighty-Sixth Annual Meeting in St. Louis, Mo., October 30, 1958.

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Journal of Public Health

EDITORIALS

Medical Care for the Needy—A Public Health Problem

Increasingly, public attention is being focused on the adequacy and quality of medical care for the needy in the United States. From the point of view of public health, existing programs in this area offer challenging opportunities to improve the health of the nation and to strengthen health services in all our communities.

Accumulating experience with medical care programs for recipients of public assistance and for the medically indigent reveals some serious deficiencies and problems which are of concern to all the states. It is evident that, in the absence of any mechanism requiring the localities to establish standards of quality or to put a premium on medical excellence, the average quality of care provided over the country is not as good as it could be. Moreover, while the size and scope of these programs offer many opportunities to provide better medical care through more rational organization of services, these opportunities are being neglected. Yet the accumulating experience which reveals these problems also provides the knowledge and the skills to deal with them constructively.

Existing tax-supported medical care programs for the needy are among the essential and irreducible measures necessary to protect and to improve the health of our people. While they serve directly only a small part of our population, indirectly they benefit the entire community. Medical care is one of the basic requirements of a needy family. It has long been recognized that needy families suffer a disproportionately large share of ill health. These programs permit them to receive medical attention and to share more equitably in the benefits of advancing medical knowledge. Furthermore, to the limited degree that they now make available preventive and rehabilitative medical care, these programs are also an important preventive measure against destitution.

Moreover, it seems clear that public responsibility for assuring access to health services will inevitably be broadened as medicine's ability to deliver new benefits increases, as medicine itself becomes more complex and expensive, and as the impact on the community of medical indigency, particularly of the aging population increases. This probable expansion of public responsibility makes it all the more necessary and urgent to assure the administrative

efficiency and social economy of existing programs and to improve the quality of care so as to assure medical excellence. Unless the medical care provided is of acceptable quality, unless a premium is placed upon prevention and rehabilitation, the public responsibility will not be adequately discharged.

Medically knowledgeable observers agree, however, that in most localities medical care furnished to public assistance recipients is fragmentary and uncoordinated, that there is no continuity of care, that too little attention is given to prevention, and that the quality of care is often indifferent and sometimes shockingly bad. Yet no competent, comprehensive investigation has ever been made of the extent to which these conditions prevail.

To understand one source of these shortcomings, it is necessary to look at the framework of present administrative arrangements and the history and public philosophy which underlies them. Since the colonial period, medical care to the needy has been provided in some measure by the localities through public assistance and public health action. Participation of the federal government through the matching of local expenditures by Social Security funds has served to strengthen these programs in all the states, in some more than in others.

The underlying intent of our Social Security structure is to render medical care to disadvantaged persons in order to meet their medical needs and in order to minimize dependency. The local welfare agency—which administers medical care for the needy in most localities—is fully aware of this intent, and local welfare personnel are deeply concerned to put this underlying philosophy into practice. However, the statutory requirements for reimbursement under these programs lays so great an emphasis on fiscal vigilance that this can overshadow considerations of quality of medical service rendered. Under these circumstances the energies of the local welfare agency are too often consumed in attention to fiscal transactions; arrangements to purchase services; arrangements to reimburse vendors; and vigilance against fraudulent use of tax moneys by either recipients or vendors of services.

Certainly, at least equal vigilance needs to be directed to the organization and quality of services purchased with public funds. The economic and human waste resulting from inadequate and poorly planned medical care is an expense that must equally, though perhaps less visibly, be borne by the taxpayer. Moreover, the present size of these tax-supported programs, the bulk of the services purchased for clients, and the amount of money spent offer tremendous opportunities for imaginative innovation in the organization of health resources and services. Such innovations could reduce the pressure on public resources as well as improve the care rendered to welfare clients. At present, little premium is placed upon the exploration of alternative ways of organizing welfare medical care services.

The development of standards of medical excellence, the organization of health services, and the supervision of health programs require people with the appropriate professional competence. It is the public health profession which has this competence, and no professional immodesty is involved in pointing to this fact. Yet, very few local public health authorities share responsibility for welfare medical care. Nor is there a federal requirement in connection with matching Social Security funds, that local programs utilize the skill and expertness of the public health profession or of the responsible local health authority in administering these programs.

This situation is also due in part to the slow and somewhat belated recognition by health officers of responsibility for the quality of medical care. Nevertheless, this outlook is changing rapidly,

and steps to place the burden of responsibility more squarely upon local health authorities would accelerate that change. Such vesting of responsibility for the organization and delivery of health services in appropriate health authorities should not and need not in any way diminish the authority and responsibility of the welfare agency to coordinate and integrate health services with all the other services needed by dependent individuals and families.

The emergence of chronic illness as the dominant public health problem in our communities is an important factor in accelerating the change in the attitude of health authorities. One consequence of this shift is that the old lines of demarcation between public health activities on the one hand and medical care programs on the other are becoming blurred and outmoded. Hopefully, medical research, which is being heavily supported by the federal government, will eventually provide us with knowledge and technics that can be widely applied throughout communities for the prevention and treatment of chronic disease just as such measures as immunization and education are being employed in the control of communicable diseases. Meanwhile, the care and rehabilitation of people with heart disease, arthritis, and other chronic conditions, require direct medical services to such individuals by physicians, clinics and hospitals, and the organization of supportive nursing and other services in the community. The public assistance caseload is heavily weighted with elderly persons beset by chronic illness. Moreover, the burden of chronic illness on elderly persons who do not qualify for or request public assistance is a matter of increasing concern. This is only one aspect of the problem of medical care for needy individuals and families. Another large group are the children for whose care the federal government shares responsibility with the states and local communities.

State and local health officers throughout the country are increasingly concerned about the quality and continuity of care provided to these groups in the population. At its last annual meeting the American Public Health Association officially recorded this concern about the quality of medical care. The time has come for a thorough and constructive appraisal of the entire welfare medical care program. Such an appraisal should examine the degree to which responsibility under the Social Security titles to care for the needy sick and to take measures to restore dependent persons to economic and social usefulness is being discharged. It should also examine how rationally this component of our public health effort meshes with the total organization of health services in our communities. Finally, it is necessary and urgent to take steps that would establish minimum standards of quality and that would put a premium on bold and dynamic efforts in local communities to take advantage of the existing potential for developing programs of medical excellence and social usefulness.

(The editorial is based upon a letter written by Dr. Leona Baumgartner in response to an invitation by the Honorable Burr P. Harrison to assist his committee (Subcommittee on Administration of the Social Security Law, Committee on Ways and Means) in its study of the administration of the Social Security Act.)

A Regimen of Health

FROM THE VERY earliest times, the preservation of life, the prevention of illness, and the promotion of health have been matters of considerable importance to men as individuals or as members of groups. Among the Greeks, as well as among other peoples, there was a general assumption that if physicians knew enough, and men adhered to hygienic modes of life, human beings could at-

tain long life. Man had a good chance of escaping disease if he lived reasonably, that is, according to certain natural laws. Implied in this concept is the idea that these laws and their consequences for behavior can be taught, and that men can in large measure be made responsible for their health. Factors such as diet, exercise, rest, and sleep played a large role in Greek thought on this subject.

This aspect of the Greek legacy has again assumed an important place in modern thought and is being extended in various directions. The growth of literacy in the Western world and the increase in the number of the medically sophisticated have produced a public that wants health information and rules for healthful living. Furthermore, new problems of prevention, specifically in relation to noncommunicable diseases, make it necessary to obtain the active participation of individuals and groups, and to gain their acceptance and support of specific health activities. This trend will in all probability grow stronger, and physicians concerned with these problems are taking the initiative in informing the public.

An instance in point is the "Statement for Guidance" with respect to arteriosclerosis issued earlier this year by a group of eight eminent physicians.[1] The statement points to five factors which predispose to arteriosclerosis, heart attack, and strokes. These factors are heredity, obesity, excessive cigarette smoking, elevated blood pressure, and an elevated level of blood cholesterol. Obviously, there is little one can do about heredity. Yet the other factors are in varying degree modifiable through medical attention and personal hygiene. To be sure, such advice may be modified by future research; nevertheless, on the basis of current evidence and experience such information for the public can be useful in prolonging life for many. The regimen of health in its modern form is still a significant medical and public health tool.

1. "A Statement for Guidance" by Louis M. Katz, M.D.; Samuel A. Levine, M.D.; Irvine H. Page, M.D.; Howard B. Sprague, M.D.; Jeremiah Stamler, M.D.; Fredrick J. Stare, M.D.; Paul Dudley White, M.D.; and Irving S. Wright, M.D. This statement was initiated by the National Health Education Committee, Inc., New York City, as a public service.

LETTER TO THE EDITOR

To the Editor:

Your editorial entitled "Local Public Health Today" and the article of Barkev Sanders in Public Health Reports again draw our attention to the failure of local health departments to continue their growth and development during the present decade. Growth of tax-supported agencies indicate a significant public appreciation that their services meet a real need. A plateau, on the other hand, may and very often does conceal a significant diminution of public interest. The usual perfunctory examination of the items in a proposed budget that are carried over from the previous year, as well as the political force of the vested interest of persons on the public payroll, undoubtedly accounts in part for the plateau rather than a decrease.

Can we logically expect that an agency which was "sold" to the taxpayer as a means of controlling communicable disease and infant and maternal mortality, and whose product still bears the same "label," will retain popular support in 1959? Can we logically expect that an agency, which was primarily designed to meet the acute health needs of the indigent and very poorly paid section of our communities, will retain popular support in the face of a prosperity that pervades the vast majority of our population?

The American people are more health conscious than ever and an increasing per cent of the gross national product is spent for health purposes. Health insurance, the voluntary health agencies, and the research agencies are growing rapidly. It is the local health department, overcautious in its acceptance of new responsibilities and new forms of service, unable to face up to present-day health needs and failing to produce a "saleable product," that is steadily losing ground.

With the real expansion of health needs especially evident in relation to our aging population, the leadership function of the local health department is needed as never before. A basic reassessment of our health needs and a flexible and inventive approach to new patterns of health department functions and services is an immediate necessity.

Jesse B. Aronson, M.D.
Director, Division of Local Health Services, State Department of Health, Trenton, N. J.

LEGISLATIVE NEWS

THE FOLLOWING constitutes an interim report on health legislation enacted by the 86th Congress. This report must not be considered as final or complete, however, since all legislation proposed during the first session of Congress remains eligible for active consideration during the second session which will be convened January 6, 1960.

Bills that were passed by both the House and Senate, signed by President Eisenhower, and became law include:

1. H.R. 6769, making appropriations for the Departments of Labor and Health, Education, and Welfare. The only appropriation bill approved by Congress in an amount greater than requested by the administration, H.R. 6769 provides more than $100 million over the 1959 appropriation for the National Institutes of Health, representing an increase of 26.5 per cent. Other allocations of funds include $186.2 million in Hill-Burton funds, the same amount as last year, maximum appropriation for waste treatment works construction and construction of research facilities, a $1,855,000 increase for radiological health, and $1,125,000 for communicable disease activities. General health, venereal disease, tuberculosis, and the other categorical grants to states were equal to those voted last year except in the areas of mental health, heart disease control, maternal and child health, and services for crippled children for which grants were increased by $1 million in each instance.

2. After considerable legislative maneuvering, the Federal Air Pollution Control Act was extended for a period of four years. The Senate approved S. 441 which called for a four-year extension with annual appropriations authorized up to a maximum of $7.5 million. The House approved H.R. 7476 which would have provided a two-year extension of the act with appropriations maintained at the current $5 million annual appropriation level. It was not until the final day of the first session that the Congress was able to reconcile these differences to approve a four-year extension with annual appropriations authorized not to exceed $5 million.

3. The Titles I and II Traineeship Programs were extended for five years. Shortly after the law previously authorizing these traineeships had expired on June 30, 1959, the Senate approved S. 731 and the House approved identical H.R. 6325. As under the original authorization, no appropriation ceilings are contained in the new act, P.L. 86-105.

4. Senate bill No. 79 was approved early in the session to become P.L. 86-2. The act authorizes temporary use of Citrus Red No. 2 under tolerance limits certified safe by the Food and Drug Administration. The legislation was backed by the Florida congressional delegation for the coloring of mature oranges.

5. The authority of the Surgeon General, Public Health Service, to cooperate with Indian tribes and communities in the provision of safe water and the sanitary disposal of wastes was clarified by the enactment of P.L. 86-121. This area of activity had been subject to legal questioning under the language of the act which transferred hospitals and health services for American Indians from the Bureau of Indian Affairs, Department of the Interior, to the USPHS.

6. The school milk program was guaranteed at least two additional years of life by the enactment of P.L. 86-163. Although a proposal was considered which would have authorized continuation with no termination date, Congress agreed on a two-year extension with an increase authorized for annual appropriations.

Two proposals reported previously in

these pages failed to receive the support necessary for enactment. In spite of overwhelming Senate approval, the International Health and Medical Research bill got bogged down in House subcommittee deliberations. Congressman Oren Harris, chairman, House Interstate and Foreign Commerce Committee, stated that the proposals contained in the bill and those advocated by the administration were irreconcilable. He added that these problems will be studied during the recess and further action will be recommended in the next session.

Legislation intended to implement the recommendations of the Surgeon General's Conference on Public Health Training was by-passed by the House subcommittee in favor of the continuation of the traineeship programs. It is difficult to predict what will occur in the next session, although the presence on the House subcommittee of members interested in this proposal would appear to guarantee at least executive consideration.

Other health measures that were approved by at least one side of the Congress include H.R. 8238, which directs the Surgeon General to conduct a two-year study of the effects on human health of substances discharged into the atmosphere by the exhausts of motor vehicles, and H.R. 1341 to establish reasonable safety standards for passenger-carrying motor vehicles purchased by the federal government. Both of these proposals passed the House but were not acted upon by the Senate.

Bills approved by the Senate but lacking House action include S. 2220, a bill liberalizing retirement procedures of the PHS Commissioned Officer Corps and authorizing an additional number of advanced-rank positions in the Public Health Service. This bill has a favorable report from the considering House committee but must be voted on by the full House. The Senate has also passed S. 2197 which proposes similar authority under the federal Food, Drug, and Cosmetic Act for color additives as that voted by the 85th Congress for food additives.

Two hearings, one by the House and one by the Senate, should be noted. The House Committee on Ways and Means heard statements varying from complete endorsement through absolute denunciation of H.R. 4700, the Forand Bill. An additional week of hearings has been scheduled in November on the operations of the Social Security Disability Program. Further consideration is anticipated during the second session.

Nine days of hearings have been held by the Senate Subcommittee on Problems of the Aged and Aging. Several additional sessions, which will be conducted throughout the country, have already been scheduled.

Of interest to many APHA members is the Independent Living Bill, introduced in both the House and Senate. Plans had been made for two weeks of hearings by the Special Education Subcommittee of the House Committee on Education and Labor, but these were preempted by full committee consideration of the now famous Labor Bill. Hearings on the Independent Living Bill have not been rescheduled, but it seems quite likely that this proposal will be considered in the next session.

One additional enactment should be reported. Upon recommendation by the Joint Committee on Atomic Energy, the Congress approved an amendment to the Atomic Energy Act that allows the Commissioner of AEC to enter into formal agreement with state governors to transfer to specific states authority for the protection of the public health from the dangers of ionizing radiation brought about by the development of atomic energy projects. In addition there is established the Federal Radiation Council to be comprised of the Chairman of the Atomic Energy Commission and the Secretaries of the Departments of Health,

Education, and Welfare, Commerce, Defense, Labor, and such other persons as shall be appointed by the President. The duties of the council are of an advisory nature.

From the preceding report it seems obvious that the Congress will be considering many proposals relating to health during the second session of the 86th Congress.

Sanitary Control of Shellfish

In 1957 the Public Health Service published a revision of Part II: Manual of Recommended Practice for the Sanitary Control of the Shellfish Industry—Sanitation of the Harvesting and Processing of Shellfish." "Part I—Growing Areas" is now available. Part I is now divided into five sections and two appendixes. The sections cover in order: general administrative procedures, laboratory procedures, growing area survey and classification, preparation of shellfish for marketing, and control of harvesting from closed areas. The appendixes cover bacteriological criteria of shellfish and shellfish waters, and inspection of certified shellfish shippers. The provisions of the new manual are in accordance with recommendations made at the Shellfish Sanitation Workshop held in Washington in 1958. Eugene T. Jensen compiled and edited the report. Public Health Service Publication No. 33 (revised 1959) Part I, Superintendent of Documents, Government Printing Office, Washington, D. C.; 45 cents.

ASSOCIATION NEWS

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Dr. Merrill—the New President

Malcolm H. Merrill, M.D., California's state director of public health, will lead the APHA in 1959-1960. He assumed office as president at the 87th Annual Meeting in October at Atlantic City, N. J.

Dr. Merrill, a native of Utah, began his professional life with an interest in chemistry, the subject for his B.S. degree at the Utah State Agricultural College. His next professional step was study for a master's degree in bacteriology (1927) at St. Louis University. He remained at the university as an assistant in bacteriology until 1932; that year he received the M.D. degree for which he had studied in the interim. In 1946 Dr. Merrill obtained the M.P.H. degree from the University of California School of Public Health; he has been a lecturer on this faculty since 1947.

Following medical school, Dr. Merrill spent three years with the Rockefeller Institute for Medical Research. In 1936-1937 he was assistant in dermatology at the University of California's Medical School. From this position he went to the California State Department of Public Health where he has served since 1937.

During his first four years at the State Health Department, he was chief of its Bureau of Venereal Diseases. Following this he headed the Division of Laboratories for 13 years. The study and control of encephalitis (including western and eastern equine encephalomyelitis) and other virus laboratory programs became firmly established functions in the State Health Department during the period Dr. Merrill was chief of this division. He was appointed deputy director of the State Health

Department in addition to his other duties in 1944. Dr. Merrill became California's director of public health in 1954.

Our new president has been active in the Association for 20 years, during 15 of which he has been a Fellow. He has served as chairman of the Resolutions Committee and of the Committee on Research and Standards. Most recently, Dr. Merrill led the Committee on Affiliated Societies and Regional Branches, and in this capacity was also a member of the Governing Council. As president-elect during the past year he has been a member of the Executive Board of the APHA.

His other professional affiliations and activities include membership on the American Medical Association's Residency Review Committee for Preventive Medicine. Since 1956 he has been on the PHS's National Advisory Committee on Public Health Traineeships, and since 1957, on both its National Advisory Committee on Community Air Pollution and National Advisory Health Council. Dr. Merrill has shared in international professional activity as chairman of the 1950 Conference of State and Provincial Public Health Laboratory Directors, as president (1957-1958) of the United States-Mexico Border Public Health Association, and as a member of the Technical Advisory Committee of the Institute of Nutrition of Central America and Panama (1955-1956, and 1958). Overseas he has been consultant in public health for India for the Technical Cooperation Administration (1952). Dr. Merrill was also a delegate on the United States Public Health Mission to the U.S.S.R. in 1957. Some forty contributions to scientific journals are among his professional activities in the fields of bacteriology, immunology, serology, and public health administration.

Dr. Merrill is a member of many honorary societies; he served, for instance, as national president of the Delta Omega Society in 1951-1952. In 1957 his medical alma mater, St. Louis University, bestowed its Alumni Merit Award on him.

President Merrill not only has abiding interest but "follow-through," as well, in community affairs. He is, for example, a life member of the California Parents and Teachers Association. His professional concern for the quality of "local" health services and the importance of their effectiveness on the national scene has prompted him to suggest that the 88th Annual Meeting to be held in his home state (San Francisco, October 31-November 3) be oriented to "What Are We Doing in Our Community?" Although a firm believer in "Public Health Is One World"—the 1959 theme at Atlantic City—he would have us remember also that "public health begins at home."

One-Fifth of Students Are from Abroad

Of the 1,200 students enrolled in the ten accredited schools of public health in the continental United States during the academic year 1958-1959, one-fifth were from 53 countries round the world. This fact is among data reported to the meeting of the Committee on Professional Education in Atlantic City on October 19. Of the 257 students from other countries, slightly over one-third were from the Americas, and nearly two-thirds were from 35 countries overseas. The largest number was from India followed closely by Canada.

These data are from a student census obtained by CPE (A.J.P.H. July, 1959, p. 950). Other facts discovered through this census are that, of native students, approximately 20 per cent were physicians and 13 per cent were nurses. Nearly one-half were either undergraduates or had only bachelors' degrees. There was at least one student from each of the states, District of Columbia, Puerto Rico, and the Virgin Islands.

California led in total number followed by New York, each with more than 100. Minnesota, Pennsylvania, and Michigan in that order sent between 50 and 100 students to one or more of the ten schools.

The most popular program in which students were enrolled is public health nursing, accounting for 18 per cent of all students and more than one-half of all women students. Hospital administration, public health administration, environmental sanitation, and health education each drew more than 100 of the 1,200 students. Next in popularity were biostatistics and epidemiology.

Nearly 30 per cent of all students were under 29 years of age and three-fourths were under 39. Women represented more than one-fourth of all students.

Thirty-six per cent of all students and more than one-half of those in public health nursing study programs were assisted by Public Health Service training grants. On the other hand, nearly one-fourth, chiefly in hospital administration and public health nursing, were without outside sponsorship. Of the 52 with WHO assistance, 38 were physicians; ICA assistance was given to 87 students, almost entirely either physicians or students with bachelors' degrees only.

A Behavioral Sciences Institute

The first of a number of proposed institutes on public health and behavioral sciences was held at Winchendon, Mass., September 9-11, 1959. This institute provided an opportunity for the firsthand exploration of the mutual interests of health workers and social scientists. Among the 31 participants were five of the six New England state health officers, as well as nine local health officers, and seven social scientists. A number of state division chiefs, people from Harvard and Yale Schools of Public Health, and several members of the Massachusetts Public Health Association were also present.

The institute was held under the sponsorship of the Joint Committee on Behavioral Sciences in Public Health, made up of representatives of the American Public Health Association, the American Sociological Association, the American Psychological Association, and the American Anthropological Association. Cosponsoring and cooperating in the planning committee for the institute were representatives of the Massachusetts and Connecticut Public Health Associations and the social science unit of the Harvard School of Public Health. Complete responsibility for financing was accepted by various New England agencies. Among the recommendations made was a follow-up institute in the spring of 1961, to be held jointly with the New England Health Institute. A complete report, including institute proceedings and analysis, will be available early in 1960.

George Rosen, M.D., professor of public health education, Columbia University School of Public Health, and editor of this Journal, is chairman of the joint committee. Edward Wellin, Ph.D., is staff director, provided by APHA through a grant from the National Institutes of Health.

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NEW JERSEY PUBLIC HEALTH ASSOCIATION, Waldo McNutt, M.P.H., Delaware River Drive, Frenchtown, N. J.
NEW MEXICO PUBLIC HEALTH ASSOCIATION, Daniel T. Marley, P. O. Box 8066, Albuquerque
NEW YORK CITY, PUBLIC HEALTH ASSOCIATION OF, Frances Ann McVey, 4317 Robinson St., Flushing 55, N. Y.
NEW YORK STATE PUBLIC HEALTH ASSOCIATION, Mrs. Kathleen Boland, Rensselaer County Health Dept., Troy
NORTH CAROLINA PUBLIC HEALTH ASSOCIATION, Robert W. Brown, Box 7525, Asheville
NORTH DAKOTA PUBLIC HEALTH ASSOCIATION, Alice H. Peterson, M.D., State Dept. of Health, Bismarck
OHIO PUBLIC HEALTH ASSOCIATION, Mrs. June O'Donnell, 3516 Braddock St., Dayton
OKLAHOMA PUBLIC HEALTH ASSOCIATION, Marjorie Butler, 3400 North Eastern, Oklahoma City
OREGON PUBLIC HEALTH ASSOCIATION, Russell E. Lee, P. O. Box 231, Portland 7
PENNSYLVANIA PUBLIC HEALTH ASSOCIATION, Emma J. Petach, R.N., 324 N. Second St., Harrisburg
PUERTO RICO PUBLIC HEALTH ASSOCIATION, Mrs. Mae de Acin, Apartado 211, San Juan 2
SOUTH CAROLINA PUBLIC HEALTH ASSOCIATION, Mrs. Laura M. DeMarse, State Health Dept., Columbia
SOUTH DAKOTA PUBLIC HEALTH ASSOCIATION, Alice Brady, R.N., State Dept. of Health, Pierre
TENNESSEE PUBLIC HEALTH ASSOCIATION, C. B. Tucker, M.D., State Dept. of Health, 420 Sixth Ave., N., Nashville
TEXAS PUBLIC HEALTH ASSOCIATION, Joseph N. Murphy, Jr., State Dept. of Health, Austin
UTAH PUBLIC HEALTH ASSOCIATION, Katherine Brandon, M.D., P. O. Box 25, Foothill Station, Salt Lake City
VIRGINIA PUBLIC HEALTH ASSOCIATION, Mrs. Helen W. Wiesmann, 1220 E. Broad St., Richmond
WASHINGTON STATE PUBLIC HEALTH ASSOCIATION, Tom Drummey, State Dept. of Health, Smith Tower, Seattle
WEST VIRGINIA PUBLIC HEALTH ASSOCIATION, Mrs. Katherine L. Brown, West Virginia State Dept. of Health, Charleston 5
WISCONSIN ASSOCIATION FOR PUBLIC HEALTH, Paul Weis, 1 W. Wilson St., Madison
MIDDLE STATES BRANCH, APHA, Thelma Luther, Dept., of Health, Des Moines, Iowa
SOUTHERN BRANCH, APHA, Guy Tate, Jr., Jefferson County Health Dept., Birmingham, Ala.
WESTERN BRANCH, APHA, Robert G. Beaumier, 1309 Smith Tower, Seattle, Wash.

Pennsylvania—Past and Future

The Eighth Annual Pennsylvania Health Conference, sponsored jointly by the Pennsylvania Public Health Association, the State Health Department, the Medical Society, and the Health Council, was held at the State University, August 16-20. An attendance of about 1,200 is reported. The general sessions were devoted to the conference theme "Fabulous 50's—Restrospect and Prospect." Charles L. Wilbar, Jr., M.D., state health officer, brought this theme to life at the first general session in his talk "A Decade of Pennsylvania's 'New Look' in Public Health."

In retrospect, Dr. Wilbar used as a yardstick the eight major recommendations of "Keystones of Public Health for Pennsylvania," a study made by the APHA Committee on Administrative Practice in 1948. He brought his audience up to date on the steps that the

state has taken to comply with these recommendations.

In prospect, he dwelt on the state's aims for the future in the problem areas of traffic casualties, excess radiation, alcoholism, civil disaster, and the aging. Another review of the state's public health program by an outside professional group would be timely. G. Brock Chisholm, M.D., former director-general of WHO, carrying the conference theme further, spoke on the "Expanding Concept of Health."

At the second general session, Lieutenant Governor John M. Davis, saying "How things have changed" in public health, pressed for a study of emotional and behavioral patterns of automobile drivers, better air pollution control, and greater emphasis on chronic disease rehabilitation. Stressing that "public interest in health matters is at an all time high . . . it is not enough," he said, "to know how to cope with a serious health problem—after it has arisen . . . we must be able to see it coming and stay on top of it."

That research is the keystone of development in health practice was the message of Leona Baumgartner, M.D., New York City health commissioner and President, APHA, who spoke at the PPHA luncheon meeting. Although research is not new to health departments, without greatly expanded research in the health field, the unnecessary lags in putting into widespread practice the lessons already learned through medical research will cost many lives and waste millions of dollars.

"No Pennsylvania community is so small that it does not need a health council," said Ira V. Hiscock, Sc.D., chairman, Department of Public Health, Yale University, speaking at the luncheon meeting of the Pennsylvania Public Health Council. If well organized it reaches all groups in the community, as well as health workers. "Its interests span the whole spectrum of health concerns and go from the very general to the specific."

A sampling of statements made at joint meetings of the sponsoring and associated groups over a two-day period indicate the attention which the state's public health worker is paying to local and national health problems.

In the state, silicosis has accounted for the death of 2,957 Pennsylvanians in the past two years and costs $15,000,000 annually, according to Jan Lieben, M.D., M.P.H., director of the state's Division of Occupational Health. Such deaths top those caused by polio and tuberculosis, ranking only slightly lower than lung cancer as a killer. The air pollution problems of Pittsburgh and vicinity are seen as improving but still have a "long way to go," according to Lee Schreibeis, Jr., acting chief, Bureau of Air Pollution Control, Allegheny County Health Department. Much of the improvement has stemmed from the change-over from coal to gas heating of homes.

On the national scene, Raymond G. McCarthy, Ed.M., Yale University School of Alcohol Studies, predicted that the prevention and treatment of alcoholism would be ineffective until "arbitrary" opinions of drinkers and nondrinkers were resolved. Alcohol should be recognized as a part of the American way of living, since drinking customs persist in spite of educational programs.

Justus D. Rice, M.D., director of medical research, Winthrop Laboratories, prophesied that, given the continued cooperation of scientists, "with ten more years of research, we can be reasonably sure that most of those diseases produced by microscopic invaders will have little more than historic interest for us." Although the degenerative diseases will still be with us, "their stifling grip will be loosened to the extent that life expectancy will have arisen from 70 to close to 80 years."

The Pennsylvania Department of Health invited all four sponsoring organ-

izations to attend its section meetings this year—a departure from the usual. Curbstone conferences were held early in the morning on two days during which 15 subjects were covered. Health screening tests were made available to conference participants. A full round of social events ended with a farewell ball.

The award of merit was given to Ruth H. Weaver, M.D., director of medical services, Board of Education, Philadelphia, in recognition of a career "dedicated to improving the health of children." Ten living past presidents of PPHA were given past president awards.

P. Walton Purdom, director, Air Pollution Control and Environmental Sanitation, Philadelphia Health Department, was the retiring president.

The following new officers were elected:

President—Robert H. Conn, M.P.H., chief, Community Health Section, State Health Department

President-Elect—Thomas F. Whayne, M.D., professor of preventive medicine and public health, University of Pennsylvania

Vice-President—Wilda G. Camery, R.N., chief, Bureau of Public Health Nursing, Allegheny County Department of Health

Secretary-Treasurer—E. Jane Petach, executive secretary, Tuberculosis and Health Society of Dauphin and Perry Counties (reelected).

Another First for Massachusetts

The annual fall meeting of the Massachusetts Public Health Association was held September 2-3, at the Western Massachusetts Public Health Center, University of Massachusetts, Amherst. In the opinion of many, the meeting's "summit" was a panel discussion on "Problems and Potentialities of Local Boards of Health," the topic of the second general session. William H. Weidman, M.D., chaired and Marjorie A. C. Young, Dr.P.H., moderated the discussion of the panel: John M. Hull, Greenfield, Richard A. Sawyer, Winchester, and Edward L. Soares, D.M.D., Fairhaven—members of three local boards of health—Mary Susich, R.N., supervisor of public health nursing, Barnstable County, and Edwin S. Warrell, supervisor of training for the Massachusetts Department of Public Health. This session marked the first time in MPHA history that professional health workers and Board of Health members were given an opportunity at the annual meeting to air their respective problems. Their exchange of views was vigorous and produced valuable food for thought.

Another high point was the general session on "Social Pathology." Dean A. Clark, M.D., general director, Massachusetts General Hospital, presided; Raymond F. Gould, Ph.D., from the Professional Services Branch, NIH, gave the keynote presentation. Leon Sternfeld, M.D., Cambridge Health Department; Professor Robert Morris, Brandeis University; and Kenneth W. Chapman, M.D., Clinic Center, Division of Research Services, NIH, provided examples and applications from the respective areas of public health, social welfare, and addiction.

The recently organized Dental Health Section held a session on the place of dental health services and personnel in the total public health picture. Health officers, public health nurses, dental hygienists, public school administrators, and dentists made up the very active audience. Edward Wellin, Ph.D., of the APHA staff, led the discussion.

Assisted by Mildred Kaufman, nutrition consultant in the chronic disease program, PHS, and John H. Browe, M.D., director, Bureau of Nutrition, New York State Department of Health, the Food and Nutrition Section explored "Meals-on-Wheels: Purposes and Pitfalls."

The Epidemiology Section gave its attention to "Sexual Promiscuity and Venereal Disease in Massachusetts," a paper by Nicholas J. Fiumara, M.D., director, Division of Venereal Diseases of the State Health Department, and "New Diagnostic Procedures in VD Control

Available to Health Personnel" by Warfield Garson, M.D., director, Venereal Disease Experimental Laboratories, Chapel Hill, N. C.

Clair E. Turner, Sc.D., Dr.P.H., chief adviser, International Union for Health Education of the Public, and Mary E. Spencer, Ph.D., director, Malden School Health Program, led the session on "Health Education Around the World."

Vincent B. Lamoreux, chief, Field Staff Branch, Public Health Division, ICA, spoke on another international theme in "World-Wide Opportunities for Sanitarians." Discussion from the floor included members' reports on actual experiences abroad.

MPHA members showed great interest in the exhibits sponsored by 18 voluntary and official health agencies.

An innovation at MPHA meetings—the "Members' Art Show"—was popular. The exhibit included paintings, water colors, pottery, linoleum and woodcuts, woven work, and other examples of the artistic hobbies of MPHA members.

The Massachusetts Association of Medical Record Librarians and the Massachusetts Association of Sanitarians met jointly with the MPHA.

Texans Like Regional Meetings

Texas Public Health Association members have shown increasing interest in recent years in the regional meetings the TPHA holds in various sections of the state. This year TPHA's South Texas meeting was held in Corpus Christi on September 18. Papers were presented on three separate topics—shellfish, mental health, care of the aged—in the morning session, with round-table discussions of these subjects held over until the afternoon. The East Texas regional meeting took place October 1, in Tyler. In the morning the group heard talks on voluntary health agencies as members of the public health team, nutrition programs for local health departments, and the manpower shortage in public health. Nursing homes, public relations, and zoonoses were the afternoon topics. The West Texas meeting was held October 15-16 in Odessa, "speakers and subjects to be announced" according to the Texas Public Health Association journal.

At the annual meeting to be held February 21-24, 1960, TPHA will award a scholarship of "$200 to $250" to the Texas high school senior who wins a state-wide contest for writing the best essay on "The Role of Your Health Department in Community Health Protection." The scholarship is made possible by the sustaining members of TPHA, three-fourths of whose dues go into the scholarship fund.

Florida Looks at Changing Needs

Tampa was the site of the 31st Annual Meeting, September 24-26, of the Florida Public Health Association. The rapporteur states that the meeting was "most successful . . . many interesting and stimulating papers given."

The three mornings were devoted to general sessions. Topic of the first was "Relationship of Public Health and Organized Medicine." Thomas R. Hood, M.D., deputy executive director, APHA, read a speech on this subject prepared by Leona Baumgartner, M.D., commissioner of health, New York City, and president of the APHA. Samuel P. Martin, M.D., head of the Department of Medicine, University of Florida Medical School, and A. Y. Covington, M.D., president of the FPHA, joined in examining the areas of mutual interest to the two professional groups. All emphasized that one way to closer ties and better understanding is to give the medical student a greater appreciation of the role of public health.

Dr. Baumgartner's paper examined "this particular skeleton (from) the closet," dwelling on the need for coop-

eration and mutual respect between organized medicine and public health. "Solo practice"—in either group—is essentially "a thing of the past," especially in a day when "health can no longer be considered a local or parochial matter." After describing several specific avenues to improving mutual relations, Dr. Baumgartner counseled both groups to "avoid being tripped by cliché-thinking," and to try to assure that the rapid and far-reaching changes in health care take place in a "manner rooted in deliberate and thoughtful social choices."

The second general session was a symposium on "Florida and Its Public Health Services of the Future—1969." Topics included social psychiatry, nursing in home care programs, public health's concern for housing, and public health's "opportunities in the administration of medical care"—all of these in a setting of a rapidly growing Florida. Perry F. Prather, M.D., state health officer for Maryland, and Margaret G. Arnstein, R.N., chief of nursing, Public Health Service, were among the out-of-state speakers.

At the final general session Wilson T. Sowder, M.D., Florida's state health officer, gave a thumbnail sketch of the state's long-range planning for public health—in keeping with the tempo of the times. Elvio H. Sadun, Sc.D., chief of medical protozoology, Walter Reed Institute of Research, pictured health conditions in underdeveloped countries. Existing technical resources in the United States should be used in raising the health level in these less fortunate nations.

In the afternoons the sections met to discuss current topics from the wide range of challenges in public health. It was the rule rather than the exception for the various sections to meet jointly. A new section, the eighth—Sanitary Engineering—was formed at this year's meeting.

A. Y. Covington, M.D., was the retiring president. The following officers were elected for 1960:

President—Nathan J. Schneider, Ph.D., director, Bureau of Laboratories, State Board of Health, Jacksonville

First Vice-President—Homer D. Venters, director, Regional Laboratories, State Board of Health, Tampa

Second Vice-President—Edward G. Byrne, M.D., director, Alachua County Health Department, Gainesville

Secretary—Everett H. Williams, Jr., director, Bureau of Vital Statistics, State Board of Health, Jacksonville

Treasurer—Helen Kemp, secretary, Leon County Health Department, Tallahassee

Delegate to the APHA Governing Council—Fred B. Ragland, director, Bureau of Finance and Accounts, State Board of Health, Jacksonville

Delegate to the Southern Branch, APHA—H. D. Peters, director, Division of Sanitation, City Health Department, Jacksonville

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EMPLOYMENT SERVICE

The following pages present information for those seeking public health personnel and for those seeking positions in public health. Other information concerning vacancies and personnel available is on file in the Association office. Anyone wishing to have the benefit of this additional information can obtain it by writing to the Vocational Counseling and Placement Service of the Association.

Advertising space in these pages is available at special rates for the use of employers or individuals. The charges are $5 for the first 50 words or fraction thereof and $1 for each additional 10 words or fraction thereof. There is no charge to members or Fellows of the Association who desire to utilize the **Positions Wanted** portion of these pages. **Closing date** for receipt of advertisements is the first of the month preceding the desired month of publication. **All correspondence should be sent to the American Public Health Association, 1790 Broadway, New York 19, N. Y.**

POSITIONS AVAILABLE

Public Health Physician—for community health program in the Canal Zone. M.P.H. and some experience. Transportation of family and household effects furnished. Approximately two months' leave yearly. Free leave travel to the United States every two years. Entrance salary $12,662.50. Schools include junior college; housing, churches, and retail stores are available in the Canal Zone. Write to Thomas G. Faison, M.D., Health Director, Canal Zone Government, or Edward A. Doolan, Personnel Director, Panama Canal Company, Balboa Heights, C. Z.

Hospital and Medical Care Director—Salary $10,536-$14,112. Vacancy with the Hawaii State Department of Health. Requires five years' administrative experience in hospital management or in a medical services agency, of which two years included administration and policy formulation responsibilities of a medical service program; graduation from an accredited medical school; one year of graduate work in hospital administration or public health; and eligibility for a license to practice medicine in Hawaii. For application and further information write to State of Hawaii, Department of Civil Service, 825 Mililani St., Honolulu 13, Hawaii.

Local Health Director—Charlotte and Mecklenburg County, N. C. Population 275,000; million-dollar budget; staff of 150; outstanding new headquarters ready for occupancy. Board certification required. Salary range $12,600-$16,380, with allowance for experience, plus travel. Reply to Dr. Howard P. Steiger, 207 Hawthorne Lane, Charlotte 4, N. C.

Health Officer—Yamhill County, 38 miles from Portland near coast and mountains. Salary $14,000 to start. Must have M.P.H. degree and some public health experience, be eligible for license to practice medicine in Oregon. Under merit system and Social Security coverage. Write to Mr. A. T. Johnson, Personnel Director, Oregon State Board of Health, P. O. Box 231, Portland 7, Ore.

Assistant Public Health Director—for Arlington County, Va. Entrance salary $10,500 a year. United States citizenship and eligibility for a license to practice medicine in Virginia required. Training or experience in public health administration desirable. Age to 50. Apply Arlington County Personnel Department, Court House, Arlington, Va.

Pediatrician—for state health department. To act as pediatric consultant within the agency and work with professional and lay groups in the field. Included in work: hospital standards, school health problems, statistical studies, future program planning. Starting salary $10,320. Ohio medical license, one year internship, at least two years' graduate training required; preferably Board of Pediatrics or eligible. Civil service position; vacation and sick leave, annual salary increments, retirement plan. Staff appointment to state university if eligible. Address inquiries to Division of Child Hygiene, Ohio Department of Health, Columbus 15, Ohio.

Director of Health—Under the general direction of the mayor and/or Board of Health, to be responsible for preservation of the public health, prevention of the spread of communicable diseases, and enforcement of laws relating to public health and sanitation; to serve as chief administrative officer of the Department of Health which has been organized for over 25 years and includes a nursing staff, environmental sanitation staff, and laboratory facilities and personnel. Salary is approximately $15,000. Civil service, vacation, sick leave, Social Security, and retirement benefits. Write **Box PH-95,** Employment Service, APHA.

Director, Local Health Services—Wisconsin. Work with the state health officer and professional staff in improvement of local health services. M.P.H. degree and eligibility for license to practice medicine in Wisconsin required. Salary $1,012-$1,247, commensurate with experience. Write E. H. Jorris, M.D., Assistant State Health Officer, 400 State Office Bldg., Madison 2, Wis.

Director, Bureau of Maternal and Child Health—Plans and directs a state-wide program for the conservation and improvement of maternal and child health; coordinates and supervises the activities of the bureau. Major activities include the child guidance, school health, and nutrition programs. Desirable qualifications and experience: M.P.H., one year of experience in private practice, five years of experience in public health work, three years of which shall have been in an administrative capacity. Pediatric training desirable. Eligibility for license to practice medicine in Wisconsin required. Salary starts at $1,122 per month with annual merit increases of $40 to $1,297. Civil service, vacation, sick leave, Social Security, retirement benefits. Group life, hospital, and sickness insurance costs shared by the state. Write E. H. Jorris, M.D., Assistant State Health Officer, 1 W. Wilson St., Madison 2, Wis.

Medical Officers, Medical Entomologists, Engineers, Sanitarians—required by the World Health Organization to serve as advisers, organizers, and field operation leaders in malaria eradication programs in all parts of the world. The following qualifications are necessary (a) **Medical Officers:** public health training; experience in tropical medicine and hygiene desirable, particularly in antimalaria work; (b) **Medical Entomologists:** field experience, particularly in antimosquito work; (c) **Engineers:** experience in the organizational and logistical management of large-scale operations; (d) **Sanitarians:** experience in antimosquito work. Apply (quoting reference MAL) to Chief, Personnel, World Health Organization, Geneva, Switzerland, giving brief details of qualifications and experience. Application forms will be sent only to those whose qualifications and experience appear to be suitable.

Welfare Medical Director—to advise on medical aspects of welfare administrative policies, develop medical care facilities, administer medical program, research costs of welfare medical care, and maintain liaison with professional medical and dental societies and facilities. Approved internship and five years in general practice or public health required. Experience in clinical medicine or child health program desirable. Eligibility for Connecticut license. Salary range $356.32-$510.35 biweekly; can appoint above the minimum. Merit system, liberal benefits, retirement, and Social Security. Reply to Charles Sheehan, Personnel Administrator, Connecticut Welfare Department, 1000 Asylum Ave., Hartford, Conn., or to State Personnel Department, Room 405, State Office Bldg., Hartford, Conn.

Director, Nursing Services — American Red Cross, West Palm Beach, Fla. Graduate approved nursing school. Registered state of employment. Bachelor's degree or equivalent. Previous public health experience or teaching desirable. Must qualify immediately after employment as training supervisor in home nursing. Excellent personnel practices. Social Security, retirement, group life insurance. Minimum salary $4,200; maximum open. Address inquiries to Miss Carolyn Y. Blitch, American Red Cross, West Palm Beach, Fla.

Biostatistician—for the Colorado State Department of Public Health. Offices in Denver, Colo. Salary $475-$620. Address inquiries to Dalton Roberts, Chief, Administrative Services, Colorado State Department of Public Health, 420 State Office Bldg., Denver 2, Colo.

Microbiologist—for county health department laboratory. Requirements: California public health microbiologist license, clinical laboratory technologist license, and two years' experience. Beginning salary $451. Ideal climate, central coastal area of California. Contact R. L. Hull, M.D., Health Officer, Hollister, Calif.

Industrial Hygiene Engineer—$641-$779. Engineering degree and three years' experience in industrial sanitation and/or air pollution. Must have experience and ability to develop complete program. Arizona Merit System, 11 North 17th Ave., Phoenix, Ariz.

Public Health Nurses — Salary range $4,944-$6,024. Starting salary depends on qualifications. Good personnel policies, health insurance, Social Security, plus liberal retirement plan. California P.H.N. certificate required. Generalized program, including school nursing. Information and application forms available from Nursing Division, Kern County Health Department, Box 997, Bakersfield, Calif.

Public Health Nurse—$4,944-$6,024, four annual increases; Social Security and state retirement, 15 working days' vacation, 12 paid holidays. Progressive health department in coastal resort area 70 miles south of San Francisco. Dr. Russell Ferguson, Santa Cruz Health Department, 1060 Emeline St., Santa Cruz, Calif.

Executive Director — Combined public health nursing agency. Education and experience in public health nursing, including supervisory experience. Have well qualified health

officer. Salary open. Five-day, 40-hour week, month's vacation, and liberal personnel policies. Capital city, population 216,000. Public Health Nursing Association, Des Moines, Iowa. Write Mrs. J. R. McNerney, Personnel Committee, 521 16th St., West Des Moines, Iowa.

Public Health Nurses—for generalized public health nursing in New Mexico Department of Public Health. Salaries $335-$455. Opportunities for advancement, retirement plan, and other fringe benefits. Write Merit System Supervisor, Box 939, Santa Fe, N. M.

Nurses—Staff and supervisory; fast-growing suburban health department. Ideal year-round outdoor life environment, mild climate. Public health training preferred, but secondary to stability, imagination, adaptability to medical-sanitation teamwork. Salary begins $310 to $420 depending on training and experience. Merit system. Address Charles L. Newberry, M.D., 10175 S.W. Old Orchard Lane, Portland 25, Ore.

Public Health Nursing Consultant (Assistant to Director of Public Health Nursing in State Health Department)—Give consultation to public health personnel in all phases of public health nursing, including in-service education; prepare manuals, guides, etc., for public health nurses; assist in administration of program. Bachelor's degree in public health nursing minimum preparation; master's degree desirable; four years' experience in public health nursing, including two in administration or supervision. Salary: start at $6,744, maximum $8,064. Civil service, vacation, sick leave, Social Security, and retirement benefits. Write Miss Ione M. Rowley, R.N., Director, Public Health Nursing, 119 Monona Ave., Madison 3, Wis.

Public Health Nurse III (District Advisory Nurse)—Give guidance and counseling to all public health nurses in a multiple-county area regarding community organization and relationships, program planning, public health nursing technics, records, and reporting. Responsible for inservice education program for local public health nurses and evaluation of nursing services. Salary range $5,664-$6,744, plus travel allowance. B.S. degree with major in public health nursing and three years' generalized experience as a public health nurse. Special requirement: registration or eligibility therefor as a registered nurse in Wisconsin; certification or eligibility for certification as a public health nurse in Wisconsin. Write R. J. Siesen, Personnel Officer, State Board of Health, Madison 2, Wis.

Sanitary Engineer—Fairfax County, Va. Starting salary $7,848, with increments to $9,792. Master's degree and three years' experience in sanitary engineering or five years' experience without master's degree. Liberal vacation, sick leave, retirement benefits. Merit system status. Write Director of Personnel, State Health Department, Richmond 19, Va.

Sanitarians—Philadelphia Department of Public Health has openings for sanitarians with or without experience; salary $5,045 to start. Generalized program. Retirement plan; free medical plan and life insurance; liberal holiday, sick leave, and vacation benefits. Required: United States citizenship, graduation from four-year college or university with major in sanitary science, dairy or food technology. Other degrees will be considered with experience. Address inquiries to Herbert Mullin, Personnel Assistant, Philadelphia Department of Public Health, Room 504, City Hall Annex, Philadelphia 7, Pa.

Industrial Hygienists and Engineers—to assist central office unit engineers develop expanded industrial hygiene and air pollution control services on a state-wide basis. Minimum requirements: bachelor's degree in chemistry or engineering and experience in industrial hygiene or air pollution. Starting salary range for industrial hygienists $360-$600 per month, depending upon education and experience; for engineers (with Ohio license) $500-$660, depending upon experience. Civil service appointment; pension system, vacation, sick leave. State-wide travel with expenses paid. Write to H. G. Bourne, Jr., Division of Industrial Hygiene, Ohio Department of Health, Columbus 15, Ohio.

Public Health Engineer II—Qualifications: master's degree with at least two years of experience in a state or local health department. Duties: direction of activities of the Sanitation Division, one of three major divisions of the Bureau of Environmental Sanitation, supervision of 36 employees. Civil service position. Vacation, sick leave, medical and hospital insurance, and liberal pension plan. Salary range $7,518-$8,147. Write to E. R. Krumbiegel, M.D., Commissioner of Health, Milwaukee Health Department, 200 E. Wells St., Milwaukee 2, Wis.

Chapter Executives, Field Workers—Leading national voluntary health agency has openings in many categories in various parts of the country. We are seeking candidates with administrative or group work skills. Experience in working with boards, committees, and volunteers particularly desirable. Positions and salaries commensurate with background and prevailing local conditions. If you are interested in long-range career planning, please send complete résumé to **Box C-31,** Employment Service, APHA.

Health Educator Supervisor—$527. Supervise Maricopa County health education

program. Growing county program. M.P.H. in health education and three years' experience in the field. Arizona Merit System, 11 North 17th Ave., Phoenix, Ariz.

Health Educator III—$403. Staff member of State Health Department, Health Education Division. Must have M.P.H. in health education. Arizona Merit System, 11 North 17th Ave., Phoenix, Ariz.

Health Education Consultant—for a state-wide program in the New Mexico Division of Mental Health. Salary range $425-$575. Master's degree in public health or health education, plus experience required. Training or experience in mental health preferred. Write Merit System Supervisor, Box 939, Santa Fe, N. M.

Trained Health Educator—for well organized county health department in Michigan. Starting salary $5,200. Excellent employment benefits. Apply V. K. Volk, M.D., Dr.P.H., Health Commissioner, Saginaw County Department of Health, 1501 N. Michigan Ave., Saginaw, Mich.

Health Education Consultants—Two positions. Washington State Health Department. (1) Generalized health education position; (2) alcoholism program. M.P.H. in health education and at least two years' experience required. Salary range $471-$561. Excellent retirement system plus OASI benefits. Liberal sick and vacation leave. Apply to Robert G. Beaumier, State Health Department, 1309 Smith Tower, Seattle 4, Wash.

Medical Social Work Consultant—Washington State Department of Health. Work in the handicapped children's program. Two years of graduate training in an approved school of social work and two years of social work experience required. Salary range $471-$561. Excellent retirement plus OASI benefits. Liberal sick and vacation leave. Apply to Robert G. Beaumier, State Health Department, 1309 Smith Tower, Seattle 4, Wash.

Public Health Educator III—Initiate and develop school-community health education programs in a multicounty district. Desirable qualifications: M.P.H. degree, plus two years' experience in health education; sound working knowledge of principles of education and methods of teaching. Salary $502-$597 per month. Travel allowance, vacation, sick leave, retirement, group insurance plans. Write Dr. Amy L. Hunter, Director, Bureau of Maternal and Child Health, Wisconsin State Board of Health, Madison 2, Wis.

Public Health Statistician—$6,809-$7,529. Challenging opportunity with the Wayne County Health Department. Many excellent employee benefits. You will have a great deal of independent judgment and be responsible for difficult statistical analysis and reports. There will be extensive IBM data available. You must have at least one year of experience within the last five in the statistical interpretation of medical or public health data and have graduated from an accredited college or university with at least a minor in mathematics or statistics. Apply: Wayne County Civil Service Commission, 628 City-County Bldg., Detroit 26, Mich. Telephone: WOodward 5-2750, Ext. 261.

Biostatistician—Wanted for employment with the Pennsylvania State Department of Health to analyze public health data, to design data collection systems, and to render professional consultation for biostatistical aspects of public health programs. Merit system, three weeks' annual leave, sick leave, state retirement, and Social Security benefits, and annual increments. Salary range $5,268-$6,716. Two years' experience handling biostatistical data and M.P.H. or equivalent. For further information or application, please contact Dr. C. Earl Albrecht, Deputy Secretary of Health, P. O. Box 90, Harrisburg, Pa.

Nutritionist—Savannah, Ga., area. Dietary survey experience preferred. One-year appointment, possibly permanent. Salary $7,030. Send résumé and date of availability to Con O. T. Ball, Vanderbilt University Hospital, Nashville 5, Tenn.

Psychiatric Social Worker—for established mental health clinic, staffed by competent psychiatrist and psychologist. Sick leave, vacation, Social Security, and excellent retirement plan. Salary range $6,000-$7,000. Write **Box SW-1,** Employment Service, APHA.

Social Work Administrator—State Board of Health, Child Guidance Division, Madison 2, Wis., Amy L. Hunter, M.D. Creative pioneering opportunity for mature, experienced social worker. Plan and integrate social work facets of public health program for prevention of emotional health problems; team approach in organization and coordination of various state-wide educational and consultation projects, including inservice training of state and local public health personnel and other professionals; education of lay groups; emphasis on discussion process to increase understanding and enhance constructive attitudes supportive of primary prevention; supervise several social workers serving on a district level in the above program. Headquarters: Madison. Requirements: M.S.W., minimum of five years' relevant experience, mainly in community child guidance clinic team, including two years as a social work supervisor. Salary $7,344-$8,724.

POSITIONS WANTED

On Box Numbers, Address APHA at 1790 Broadway, New York 19, N. Y.

Public Health Administrator—Returning from ICA Far East assignment in summer of 1960. Desire teaching or administrative position in private foundation or school of medicine, either in the United States or abroad. Especially interested in presenting public health courses to foreign students in the United States. Aged 48, male, no family ties, free to travel. Degrees in medicine and public health. Fluent French and good knowledge of Spanish. **Box PH-94,** Employment Service, APHA.

Industrial Nurse Administrator, Consultant—Female, graduate outstanding medical center, partial Ph.D. Seven years' experience in industrial nursing administration and supervision. Prefer administrative, consultant, supervisory post with large company, New York City or environs, Florida, California, or Hawaii. Also seven years' diversified experience in hospital, nursing school administration, teaching. Would consider health education, hospital, college, school, or nursing publication post. **Box C-50,** Employment Service, APHA.

Commercial Advertisements

All communications on the following commercial advertisements should be sent to Burneice Larson, Medical Bureau, Suite 605, 900 North Michigan Avenue, Chicago 11, Ill.

OPPORTUNITIES AVAILABLE

. (a) Health officer, ability to plan, execute administrative policies; thorough knowledge of state and federal public health laws; effective public speaker; ideal West Coast location; (b) Medical director for Atlantic Coast Blood Center; public health experience desirable; top salary for qualified person; present incumbent retiring; (c) Public health physician, join staff Pacific Island general hospital; heavy outpatient service; excellent employee benefits; annual salary increments; (d) Director, national health organization; large medical, public health, social worker staff; M.W. (e) Nurse consultant, excellent opportunity demonstrate administrative ability; S.W. department of health; $7,000; also M.W. $8,500; (f) Executive Director VNA near Chicago; combined program; $8,000; (g) Executive public health nurse, coordinate VNA and city health department in merger, leading city; $15,000-$18,000; (h) Public health inspector; foreign operation, one of the leading oil companies; master's or doctor's degree in public health or other similar degrees; two-year contract; area, 100,000; salary open, probably $12,000-$13,000; English is spoken.

SITUATION WANTED

Medical Director, national health organization; 20 years' experience in development of health procedures, administration, research.

BOOK REVIEWS

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted.

URBAN SPRAWL AND HEALTH: Report of the 1958 National Health Forum conducted by the National Health Council, Philadelphia, Pa. New York, N. Y.: The Council (1790 Broadway), 1959. 228 pp. Price, $1.75.

The American people are in the grip of a revolution in their way of life of which relatively few are fully aware. One aspect of this revolution is the unprecedented increase in population—which will bring 50 million more people in the next 15 years. Another aspect is the growth of metropolitan areas which are coalescing into regional cities.

The development of the public health movement, among other innovations in civilization, bears great responsibility for this revolution. The dramatic achievement of public health has been the control of communicable disease. However, the present population and urban explosion calls for a vast expansion of function best summed up with the term "control of environment."

The individual papers in this report form, in their entirety, a "tour de force" of interdisciplinary approach to the health problems of people in big cities. So wide is the range of professions represented and of subject matters dealt with, that there is almost sure to be something of value to every urban caretaker profession. There are papers dealing with analyses of basic causes, with case studies, and with alternate solutions.

The possibility of intelligent action on sufficient scale to meet urban health needs seems slight. Various formidable obstacles deny the application of knowledge to present-day problems. Political fragmentation, scarcity of personnel, inadequacy of funds, and lack of communication are barriers. Meanwhile the pace of change is bringing new problems upon a vast scale: management of water resources, control of air pollution, control of radioactivity, accident prevention, prevention of emotional maladjustments and, finally, perhaps, control of population growth. The American folklore which stresses personal reward and individual economic gain and regards cities as "evil" militates against the rational collective action that the facts point to.

Still, there are positive steps that can be taken, as various papers point out. One is the "interdisciplinary approach" of which this conference is a milestone. Another is "community organization," in order to achieve democratic citizen involvement in defining problems and finding solutions. A third is a practical flexibility in devising new administrative and political mechanisms. And still another is the allocation of a vastly increased share of our national productivity for promoting the well-being of city dwellers.

Read it as carefully as you can, and ponder. MARK FORTUNE

TUBERCULOSIS MEDICAL RESEARCH (National Tuberculosis Association—1904-1955—Historical Series No. 9)—By Virginia Cameron and Esmond R. Long. New York, N. Y.: National Tuberculosis Association (1790 Broadway), 1959. 325 pp. Price, $5.00.

This volume is the ninth in a series of historical sketches by the National Tuberculosis Association. It is a record of medical research as developed by the National Tuberculosis Association since its organization in 1904. This record is important because it recounts the earliest expansion into the field of research by a voluntary agency; the utilization of established laboratories by the NTA rather

than building a special institute for such purposes was a new concept when adopted by NTA and the pattern of research developed by this association has been widely copied by other organizations.

The text is conveniently divided into three parts—historical development, the researches, and the administrative and financial aspects. The authors have contrived to present a wide variety of highly technical topics into a consecutive story by the engaging literary style employed.

The volume is of documentary importance primarily for those interested in the field of tuberculosis, but it can also be of considerable interest to any individual or organization concerned with the organization and financing of research programs.

HERBERT R. EDWARDS

THE NEW CHEMOTHERAPY IN MENTAL ILLNESS—Edited by H. L. Gordon. New York, N. Y.: Philosophical Library (15 East 40th St.), 1958. 762 pp. Price, $12.00.

This large volume contains 118 articles on the tranquilizing drugs reprinted from a variety of scientific journals. The majority of the articles were originally published in 1955 and 1956 and consist almost entirely of uncontrolled clinical reports which concern themselves primarily with chlorpromazine and reserpine. It is not obvious either from the introduction or from the individual articles that they have, in fact, been reprinted from other sources. The journals in which the articles were originally published are listed in a separate section at the back of the volume. The articles are grouped under two headings, "general surveys" and "clinical experience." There is no subject index. No critical analysis or synthesis of the published material is attempted.

Although there may be some value in having all these articles within a single cover, the title, "The New Chemotherapy in Mental Illness," seems inappropriate and misleading. The majority of the articles are now two or three years out of date, and the book contains no reference to the many other psychiatric drugs which are now available for prescription use. Since drugs have been used in psychiatry since 1953, the term "new" is particularly misleading. The field of psychopharmacology badly needs critical analyses of past research and more adequate and better designed new research. The contribution which can be made by a compilation of older articles such as the one this book provides is rather limited. To have real value the republishing of scientific articles in a given field should involve great care in the selection of especially good papers and should attempt to structure and index the material in such a way as to make it of real benefit to the reader.

JONATHAN O. COLE

GIVE US THE TOOLS—By Henry Viscardi, Jr. New York, N. Y.: Eriksson-Taplinger (119 West 57th St.), 1959. 266 pp. Price, $3.95.

Successful job placement is the goal of most rehabilitation programs and many severely disabled individuals often become nonrehabilitated cases because they are not accepted by industry. Hank Viscardi, Jr., himself born without legs, has described in a nontechnical, informal style, one successful solution to this problem.

Abilities, Inc., started in a rented garage in 1952, with four employees. Today it occupies its own $650,000 building in Albertson, Long Island, and reports a million dollar business annually. Among its more than 300 severely disabled employees are a person who works flat on his back, a packaging plant foreman born without arms or legs, a polio victim with two paralyzed legs and one partially paralyzed arm, and other single or multidisabled workers. "Matching Abilities" and job re-engineering and

modification enable these workers to handle the large variety of jobs which Abilities, Inc., secures from industry.

Mr. Viscardi believes Abilities is a pilot project demonstrating what the disabled can do and he cites shops like Abilities which have developed in many other areas.

Industrial physicians, Workmen's Compensation staff, rehabilitation counselors, psychologists, and other professional personnel in the health fields should be familiar with Abilities, Inc., and its associated organization, Human Resources Corporation, a medically and vocationally oriented center for research on the disabled worker.

The author has made a contribution to rehabilitation literature in this account of two projects which represents a significant attack on two problems with universal impact: the most effective means of utilizing manpower to best serve the national economy, and, perhaps even more important, giving every citizen an opportunity to function at his maximum potential. ABRAHAM JACOBS

THE GREAT DECISION: THE SECRET HISTORY OF THE ATOMIC BOMB—By Michael Amrine. New York, N. Y.: Putnam's, 1959. 251 pp. Price, $3.95.

From the main title to the last paragraph, this book has a thesis which most reviewers have ignored. With a few notable exceptions like E. U. Condon, in "Science," July 3, their indifference is apparently one more confirmation of the phenomenon which Amrine discusses. Whatever readers may assume, he is not seeking to report as a sensation events which are in themselves sensational beyond imagination, and he is not expounding a partisan view as to the wisdom of the development of nuclear science. His point, essentially, is that policy decisions of grave moment, epochal in the consequences, were made not once but several times by the great ruling powers of the world, consciously but almost casually, with only superficial consideration or deliberation. It is not the bomb itself that is terrifying—it is the indicated irresponsibility and ineptitude of human societies armed with devastating powers.

The author's thesis is not that there were no agonies of soul-searching among the mighty. Amrine indicates that individuals of high rank brooded deeply over the course of events. His thesis is that even so they unaccountably failed to conduct systematic discussions of the total implications of the objective scientific facts. They appear completely to have ignored one expert document, the so-called Frank report, which did seek to analyze the political and physical aspects of the atomic bomb, with judgments that events have proved were prophetic. (It appears ironical according to Amrine that those most alert to the political aspects of the bomb, and most perceptive of the probable consequences, were physicists, rather than politicians. Had they been better politicians, perhaps more attention would have been paid to their views.) And certainly the physical facts and the political issues have not, even to this day, received the public airing and discussion they have deserved.

In addition to its service in calling attention to this defect in political institutions, the book systematizes certain commonly available information on the events attending the nuclear arms race and provides much unfamiliar information, such as the essence of the Frank report, also.

In an international atmosphere of secrecy and terror, it is hard to see how any nation can conduct an open debate for public enlightenment on issues of such consequence as nuclear competition. But even in secret councils it would seem that responsible men would explore every available expert judgment in detail before taking decisions that may carry the

world beyond the point of no return. Unquestionably, the pressure of other demands, even the physical necessity for sleep and breakfast, distracted the policy-makers from giving adequate attention to these issues. But possibly some blame falls also on those who knew better and, lacking the courage of their own convictions, failed to cry out loud.

MARCUS ROSENBLUM

ECONOMICS OF MENTAL ILLNESS (Joint Commission on Mental Illness and Health)—By Rashi Fein. New York, N. Y.: Basic Books (59 Fourth Ave.), 1958. 164 pp. Price, $3.00.

This is an attempt to define and measure the care costs (direct) and the production loss costs (indirect) of mental illness in the United States.

The demonstration that the community suffers economic loss through the toleration of preventable disease has been useful to public health personnel. The toll of mortality among young breadwinners was translated into estimates of long run loss of production and family support by the calculations of Dublin and Lotka. In measuring the indirect costs of mental illness, Rashi Fein improves on the insurance-oriented approach. He defends successfully the concept that the cost of maintaining the breadwinner is not to be deducted from his lost production. A democratic society considers the earner and his consumption as an end and not merely as means to family support. Dr. Fein applies to mental patients appropriate probabilities of lost work years following from their age-sex distribution. From this he derives lost work income and, by an inference, production loss, based on nation-wide median wages. He uses the same ideas, plus a discounting procedure derived from Dublin and Lotka, to estimate lost "present value of future earnings."

Another portion of the study estimates direct care expenditures, governmental and private, as "in the order of $1.7 billion" a year; but the handling of physicians' services leaves questions and capital accounting is omitted. The indirect costs are in the order of double the direct care costs. Schizophrenia is the most costly mental illness in the loss of aggregate working years.

Although some of the details of calculation could have been consigned to an appendix, the book contains some interesting tables on patient population, expenditures, and the like. Neverthless, the book-length effort does not seem to have been entirely well placed. When the demonstration is over, the fact remains (as Dr. Fein is aware) that social action is not strictly dependent on the contingency that a specific health program will "pay for itself." CHARLOTTE MULLER

TECHNOLOGY IN AMERICAN WATER DEVELOPMENT—By Edward A. Ackerman and George O. G. Lof. Baltimore, Md.: Johns Hopkins Press, 1959. 710 pp. Price, $10.00.

The authors have set themselves a formidable task, as well as a fruitful one, in their analysis of the adaptation of administrative structure for water development to problems presented by technology. This effort is exemplified in a text volume of some 650 pages with an additional odd 50 pages of glossary, general references, data sources, and index.

It is undoubtedly true that progress in water development in the United States, and probably everywhere else, waits upon institutional evolution, whether administrative or fiscal, rather than upon technology. The latter usually moves forward more rapidly than the governmental structure essential to action.

Because of this past experience and the prospect in technology, the authors attempt to relate in extenso the problems posed in moving toward organization for development. They give many of the solutions evolved in the past and those emerging from additional technology of the present and future.

The general reader will not have easy going with the book, because joint work by reader and authors is essential to the pursuit of the reasoning, often abstract in nature although resting upon the empirical. The health officer and his associates, already confronted by encroachments upon their jurisdiction over some phases of water development by ever-expanding water use and reuse, would profit much if they studied carefully Chapters 21 and 22. These summaries should whet their appetites for further more arduous and rewarding exploration.

ABEL WOLMAN

THE HUMAN SIDE OF URBAN RENEWAL—By Martin Milspaugh and Gurney Breckenfeld. Edited by Miles Colean. Baltimore, Md.: Fight Blight Incorporated (502, 32 South St.), 1958. 213 pp. Price, $3.50.

James Rouse, president of ACTION (American Council to Improve Our Neighborhoods), has said, "This is a story that needs to be told." This book may be disappointing to the person who expects to find all the answers to the apparent insurmountable problems of housing rehabilitation and relocation of families displaced by urban renewal, housing code enforcement, and other governmental actions. It will probably have a disquieting effect on the person who thinks that urban renewal, housing code enforcement, and housing rehabilitation are the complete solutions to all our housing ills. The urban renewal administrator, the sanitarian, or building inspector who thinks of housing only in terms of window area, plumbing fixtures, and paint will be brought up sharply by the authors to the realization that "housing is people."

This book tells of the down-to-earth problems of rehabilitation of housing and its effect on the slum dwellers of Baltimore; the frustrations of housing rehabilitation as it relates to the southern Negro in Miami and New Orleans; and the heartwarming success achieved through neighborhood organization in Chicago.

The text often leaves the reader depressed by its account of mistakes that have been made in urban renewal and housing programs. He will become angered with the description of programs which failed because of bungling, inept administration, bad politics, and lack of know-how. On the other hand, the reader can reap immense benefits by taking careful note of those things which were done correctly and which resulted in successful urban renewal programs. For those persons working in the front line of housing code enforcement, urban renewal, family relocation, and allied programs this book should be extremely helpful. If busy people cannot find time to read the entire book they should at least read the summary chapter entitled, "The Lessons Learned."

J. ROBERT CAMERON

PARTNERSHIP FOR PROGRESS: INTERNATIONAL TECHNICAL COOPERATION—Edited by Richard W. Gable. Annals of the American Academy of Political and Social Science, May, 1959. Philadelphia, Pa.: The Academy (3937 Chestnut St.), 1959. 222 pp. Price, $2.00.

Those who have been waiting for a thoughtful analysis of the problems of international technical cooperation will find it in this collection of papers. The volume "examines technical cooperation from the perspective of its administration: its forms, problems, and illustrative cases." Its purpose in serving ". . . as an introduction to the problems of administration of technical assistance in the hope that constructive evaluation will result . . ." has been admirably achieved.

Seventeen individual papers are addressed to various facets of the total problem and they include consideration of programs administered by the United Nations, the United States Government, the Sino-Soviet bloc, and a private foundation (Ford). The papers are of high

quality and they have been skillfully assembled by the editor.

The serious omission of a contribution by a recipient of technical assistance is explained in the foreword. Perhaps this is why insufficient attention is given to the attitudes and problems of receiving countries. In this context the "Partnership for Progress" portion of the title represents an ideal rather than an operating reality. Regrettably, but perhaps necessarily, the partnership remains rather one-sided.

A perusal of this volume is strongly recommended for those who are interested in international technical cooperation; it is must reading for those who are engaged in planning, operating, or evaluating technical assistance programs.

CRAIG S. LICHTENWALNER

ABOUT YOURSELF (TEACHERS' EDITION)—By W. W. Bauer; Dorothy M. Baruch; Elizabeth Rider Montgomery; and Elenore T. Pounds. Chicago, Ill.: Scott, Foresman (433 East Erie St.), 1959. 288 pp. Price, $2.12.

A fifth-grade teacher with a sincere desire to present health information effectively will enthusiastically welcome this book. The quartet of authors, who have produced several health texts in a current series, have successfully used personal pronouns to meet the interest in physiology of the fifth-grade student.

"About Yourself," a revision of a 1948 publication, is well written, most readable, appealing, and excellently illustrated with attractive line drawings in "modern" colors.

The strong emphasis on physiology is expertly woven into the text, not via a disguise, but rather as the basis for answering questions and meeting student needs. Integrated with the subject matter, which covers the basic body processes and systems and the problems associated with each, are the topics of safety and physical education. Sections entitled, "Special Research for Hard Workers," "What Do You Think?," and "Things You Can Do," reflect the functional approach to health teaching which the authors employed to encourage the development of critical thinking.

Accompanying the textbook is a guidebook for teachers which includes both a philosophical and practical approach to the utilization of the publication, plus pertinent lesson plans incorporating miniature facsimiles of the text pages.

Teachers and students alike should enjoy and learn from "About Yourself." Your reviewer did! MARY K. BEYRER

GERMFREE VERTEBRATES: PRESENT STATUS. ANNALS OF THE NEW YORK ACADEMY OF SCIENCE. Vol. 78, Art. 1—By James A. Reynierts, et al. New York, N. Y.: The Academy (2 East 63rd St.), 1959. 400 pp. Price, $5.00.

With the interest of germfree life (Gnotobiotics) from the academic to the applied aspects, wider knowledge of the problems of rearing germfree vertebrates and the use of such vertebrates was recognized by the New York Academy of Sciences. This monograph in 31 different articles discusses facilities necessary for rearing and the actual rearing of germfree vertebrates. It also gives consideration to the characteristics of such animals, their use and the present status and future of germfree life studies.

VA PROSPECTUS, RESEARCH IN AGING—Veterans Administration. Washington, D. C.: U. S. Government Printing Office, 1959. 125 pp. Price, $1.50.

Papers given and discussion evoked at an expanded meeting of the Veterans Administration Advisory Committee for Problems of Aging constitute the body of this book. Processes and research problems of aging are dealt with at five levels—molecules, cells, organs, individuals, and groups. The focus is mainly, but not exclusively, medical. This book is useful, stimulating, and highly readable.

BOOKS RECEIVED

Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.

AMERICAN HANDBOOK OF PSYCHIATRY. VOLS. I AND II—Edited by Silvano Arieti. New York, N. Y.: Basic Books, 1959. 2098 pp. Price, $25.00.

ANATOMY AND PHYSIOLOGY. VOL. 2: URINARY, RESPIRATORY, AND NERVOUS SYSTEMS. College Outline Series. E. B. Steen and A. Montagu. New York, N. Y.: Barnes and Noble, 1959. 314 pp. Price, $2.50.

ANNOTATED GUIDE TO FREE AND INEXPENSIVE HEALTH INSTRUCTION MATERIALS. D. N. and J. R. LeFevre. Carbondale, Ill.: Southern Illinois University. Boydston Press, 1959. 71 pp. Price, $5.00 cloth; $2.50 paper.

BIBLIOGRAPHY OF THE DOG. M. M. Mason. Ames, Iowa: Iowa State University Press, 1959. 401 pp. Price, $6.00.

CAPE TO CAPE BY WHEELCHAIR. E. M. Guman. New York, N. Y.: William-Frederick, 1959. 225 pp. Price, $4.75.

CASES IN HOSPITAL ADMINISTRATION. G. F. Billington. New York, N. Y.: Columbia University School of Public Health and Administrative Medicine, 1959. 178 pp. Limited distribution free.

CHEMICAL ELEMENTS. H. M. Davis. Washington, D. C.: Science Service, 1959. 204 pp. Price, $.55.

CLINICAL PRACTICE OF THE DENTAL HYGIENIST. E. M. Wilkins and P. A. McCullough. Philadelphia, Pa.: Lea and Febiger, 1959. 464 pp. Price, $9.50.

COMPLETE EMPLOYEE—A HANDBOOK FOR PERSONNEL APPRAISAL. R. W. Adams. Chicago, Ill.: Public Administration Service, 1959. 68 pp. Price, $2.00.

CURRENT MEDICAL REFERENCES. P. J. Sanazaro, Editor. Los Altos, Calif.: Lange Medical Publications, 1959. 535 pp. Price, $3.50.

CURRENT TRENDS IN RESEARCH AND CLINICAL MANAGEMENT OF DIABETES. P. H. Forsham, et al. Annals of the New York Academy of Sciences, Vol. 82, Art. 2. New York, N. Y.: The Academy, 1959. pp. 191-644. Price, $4.50.

DELINQUENT BEHAVIOR. PRINCIPLES AND PRACTICES. Prepared by W. C. Kvaraceus, et al. Washington, D. C.: National Education Association, 1959. 350 pp. Price, $2.00.

DIABETIC'S HANDBOOK (2nd ed.). A. M. Sindoni, Jr. New York, N. Y.: Ronald Press, 1959. 285 pp. Price, $4.50.

EDUCATIONAL PSYCHOLOGY AND CHILDREN. K. Lovell. New York, N. Y.: Philosophical Library, 1959. 272 pp. Price, $6.00.

ENZYMES OF POLYNUCLEOTIDE METABOLISM. J. S. Roth, et al. Annals of the New York Academy of Sciences, Vol. 81, Art. 3. New York, N. Y.: The Academy, 1959. pp. 511-804. Price, $5.00.

FOOD. THE YEARBOOK OF AGRICULTURE 1959. U. S. Department of Agriculture, Washington, D. C. Gov. Ptg. Office, 1959. 736 pp. Price, $2.25.

GENERAL FOODS KITCHENS COOKBOOK. New York, N. Y.: Random House, 1959. 436 pp. Price, $4.95.

HEALTH SERVICES IN ISRAEL 1948-1958. Edited by Th. Gruslka. Jerusalem: Ministry of Health, 1959. 214 pp.

HEARING LOSS—WHAT CAN BE DONE ABOUT IT. G. G. Boyd. Philadelphia, Pa.: Lippincott, 1959. 190 pp. Price, $1.45.

HISTORY OF THE AMERICAN DIETETIC ASSOCIATION. Edited by M. I. Barber. Philadelphia, Pa.: Lippincott, 1959. 328 pp. Price, $6.00.

HOW CHILDREN LEARN TO SPEAK. M. M. Lewis. New York, N. Y.: Basic Books, 1959. 143 pp. Price, $3.00.

HOW TO LIVE THROUGH JUNIOR HIGH SCHOOL. E. W. Johnson. Philadelphia, Pa.: Lippincott, 1959. 288 pp. Price, $3.95.

HUMAN ANATOMY, ATLAS OF (revised and enlarged). F. Frohse; M. Brodel; and L. Schlossberg. New York, N. Y.: Barnes and Noble, 1959. 180 pp. Price, $2.95.

HYPOTHERMIA. A. C. Taylor, et al. Annals of the New York Academy of Sciences, Vol. 80, Art. 2. New York, N. Y.: The Academy, 1959. pp. 285-550. Price, $3.50.

LIBERAL ARTS AS VIEWED BY FACULTY MEMBERS IN PROFESSIONAL SCHOOLS. P. L. Dressel; L. B. Mayhew; and E. J. McGrath. New York, N. Y.: Teachers College, Columbia University, Bureau of Publications. 68 pp. Price, $1.50.

LIBERAL EDUCATION IN THE PROFESSIONS. E. J. McGrath. New York, N. Y.: Teachers College, Columbia University, 1959. 63 pp. Price, $1.50.

MASTER YOUR TENSIONS AND ENJOY LIVING AGAIN. G. S. Stevenson and H. Milt. New York, N. Y.: Prentice-Hall, 1959. 241 pp. Price, $4.95.

MEDICAL CARE FOR WELFARE RECIPIENTS—CALIFORNIA. M. Greenfield. Berkeley, Calif.: University of California, Bureau of Public Administration, 1959. 215 pp.

MEDICINE FOR THE LAYMAN. P. Kuhne. New York, N. Y.: McBride, 1959. 452 pp. Price, $5.00.

MOTIVATION TO WORK. F. Herzberg; B. Mausner; and B. B. Snyderman. New York, N. Y.: Wiley, 1959. 157 pp. Price, $4.50.

PAN AMERICAN SANITARY CONFERENCE XV AND X MEETING REGIONAL COMMITTEE OF THE WHO FOR THE AMERICAS. MINUTES, RESOLUTIONS, AND DOCUMENTS. Washington, D. C.: Pan American Sanitary Bureau, Regional Office of the WHO, 1959. 548 pp.

PHARMACOPOEA INTERNATIONALIS (INTERNATIONAL PHARMACOPOEIA) SUPPLEMENT. World Health Organization. New York, N. Y.: Columbia University Press, 1959. 224 pp. Price, $5.00.

PRACTICAL FOOD INSPECTION (5th ed.). C. R. A. Martin. London, England: H. K. Lewis, 1959. 656 pp. Price, L3.3s.net.

PSYCHOPHYSIOLOGICAL REACTIONS TO NOVEL STIMULI: MEASUREMENT, ADAPTATION, AND RELATIONSHIP OF PSYCHOLOGICAL AND PHYSIOLOGICAL VARIABLES IN THE NORMAL HUMAN. R. A. Dykman, et al. Annals of the New York Academy of Sciences, Vol. 79, Art. 3. New York, N. Y.: The Academy, 1959. pp. 43-197. Price, $2.50.

PSYCHOSOCIAL PROBLEMS OF COLLEGE MEN. B. M. Wedge. New Haven, Conn.: Yale University Press, 1958. 291 pp. Price, $6.50.

PUBLIC HEALTH LAWS OF PENNSYLVANIA. D. Stahl, Editor. Pittsburgh, Pa.: University of Pittsburgh School of Law, 1958. 767 pp.

PUBLIC HEALTH IN THE TOWN OF BOSTON 1630-1822. J. B. Blake. Cambridge, Mass.: Harvard University Press, 1959. 278 pp. Price, $6.50.

RADIOACTIVE FALLOUT—A TWO-YEAR SUMMARY REPORT—U. S. ATOMIC ENERGY COMMISSION. C. L. Dunham. Washington, D. C.: Office of Technical Services, Department of Commerce, 1959. 110 pp. Price, $1.25.

RECENT CONTRIBUTIONS TO ANTIBACTERIAL THERAPY. P. S. Rhoads, et al. Annals of the New York Academy of Sciences, Vol. 82, Art. 1. New York, N. Y.: The Academy, 1959. 190 pp. Price, $2.50.

SPEAKING OF PREPAID DENTAL CARE . . . A GLOSSARY OF TERMS. Washington, D. C.: U. S. Department of Health, Education, and Welfare, Division of Dental Resources, 1959. 25 pp. No charge.

STUDIES OF HIGHWAY DEVELOPMENT AND GEOGRAPHIC CHANGE. W. L. Garrison; B. J. L. Berry; et al. Seattle, Wash.: University of Washington Press, 1959. 291 pp. Price, $7.50.

SURVEY OF EMPLOYERS' PRACTICES AND POLICIES IN THE HIRING OF PHYSICALLY IMPAIRED WORKERS. New York, N. Y.: Federation Employment and Guidance Service, 1959. 133 pp.

SWIMMING POOLS (A Sunset Book). Menlo Park, Calif.: Lane Publishing, 1959. 112 pp. Price, $1.95 paper; $3.50 library edition.

VITAL STATISTICS 1949 TO 1955 INCLUSIVE OF NEW YORK CITY. New York, N. Y.: City Department of Health, 1959. 250 pp.

VIRUS. W. Weidel. Ann Arbor, Mich.: University of Michigan Press, 1959. 159 pp. Price, $4.50.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

Raymond S. Patterson, Ph.D., F.A.P.H.A.

Pro BCG—This second report of a truly monumental study of the effect of BCG (and Britain's own vole vaccine) covers the first five years of the research that was begun in 1950, and includes a preliminary report on some later findings. During the first five-year period, better than an 80 per cent reduction in incidence of tuberculosis was recorded for groups vaccinated (with both vaccines) over that of the controls. "The protective efficacy of each vaccine was substantial . . ." the committee concludes conservatively.

ANON. BCG and Vole Bacillus Vaccines in the Prevention of Tuberculosis in Adolescents. Brit. M. J. 5149:379 (Sept. 12), 1959.

John Bull's Health—Here you will find ". . . a series of descriptive notes kindly contributed by the representative associations of (nonmedical) people working in the public health field." (There are a dozen of these associations in addition to the professional bodies of medical health officers and medical associates in a variety of categories.) Continuing: "The Public Health Service is particularly fortunate in the assistance it gets from (forthy-three) organizations in matters of health education, of the care of mothers and children and the provision for the handicapped of all ages." The total is impressive. How does the United States stand at the moment in this grim race to cover the field with disease-preventative and health-promotional groups?

ANON. Health Department Workers and Their Associations. M. Officer 102, 10:106 (Sept. 4), 1959.

Who's Worried?—In a two-county survey an attempt was made to learn if people are apprehensive about the radiologic hazards of mass x-ray screening. Of the 667 people interviewed only about 8 per cent seemed influenced by any concern about the hazards involved.

BOEK, W. E., et al. Routine Chest Roentgenograms: Fears and Practice. New York State J. Med. 59, 18:3403 (Sept. 15), 1959.

Regular Fellers! — Through an anonymous questionnaire given to a great number of (British) school children, information was sought about smoking habits and the reasons for beginning smoking. Among many other conclusions was this one: "Knowledge of the potential danger of smoking had a significant influence in reducing childhood smoking . . . (so) preventive propaganda should be useful . . . (and) should cover the later years of primary school life as well as the senior school years."

BOTHWELL, P. W. The Epidemiology of Cigarette Smoking in Rural School Children. M. Officer 102, 11:125 (Sept. 11), 1959.

Economical Efficiency—The purpose of administration, the author emphasizes, is to get the required job done with the least expenditure of time, dollars, and energy consistent with maintained quality of work. She is talking about public health nursing but her

definition seems to fit a lot of other program categories in our field. Her discussion covers four general areas of activity—all well worth your thoughtful study.

FREEMAN, R. Principles of Administration in Public Health Nursing. Nursing Outlook 7, 9:514 (Sept.), 1959.

The Mind at Work—They showed the motion picture, "Breast Self-Examination," to all the women employees of a great university. Each group was invited to ask questions. One hundred of the queries stimulated by the picture are classified and analyzed. No follow-up could be undertaken to see if the desire for information bore any relation to doing anything about the suggested action to be taken.

GAULT, A. E. How Do People Respond to Health Films? Nursing Outlook 7, 9:536 (Sept.), 1959.

Where Angels Fear to Tread—If you are one who has yearned to do a really scientific piece of research on some community problem within your realm, then you will find much food for second thought in this reconsideration of the reasons for, the methods used, and the results of the, by now, classic Framingham Heart Study.

GORDON, T., et al. Some Methodologic Problems in the Long-Term Study of Cardiovascular Disease: Observations on the Framingham Study. J. Chronic Dis. 10, 3:186 (Sept.), 1959.

Not First Aid—This pilot study of the possibilities for small-plant industrial health counseling by the public health nurses of a large city health department will be of interest to more than just our occupational hygiene membership. What was attempted and how much the demonstration accomplished is reported in useful detail.

KILMER, E. W., and RYER, I. A Health Counseling Program for Small Industries. Am. J. Nursing 59, 9:1284 (Sept.), 1959.

A Curious Phenomenon—Does the markedly excessive mortality among young widowed persons arise from a selective factor of ill-health acting as a deterrent to re-entry into the married state? Or do "poor-risk" individuals tend to chose similar mates? Or are widows and their deceased spouses joint victims of an unfavorable environment? Or do the stressful conditions of widowhood tend to excessive death rates?

KRAUS, A. S., and LILIENFELD, H. M. Some Epidemiologic Aspects of the High Mortality Rate in the Young Widowed Group. J. Chronic Dis. 10, 3:207 (Sept.), 1959.

Influencing People — Promotional methods that induced about 1,800 residents of a relatively small city to enter into a glaucoma screening clinic should prove suggestive to health people everywhere who are about to embark upon any sort of public clinic service. How the clinic was operated and what the screenees thought of their experience are dutifully recorded.

MCCORMICK, J. C. "Glaucoma Can Rob You . . ." Health Educators at Work 10, 5: 40-45 (May), 1959.

Boosters on Schedule—Among a number of practical findings from a study of immunity response after two methods of pertussis prophylaxis is this recommendation: "From a public health viewpoint, one would hesitate to recommend a change in the already established program of child immunization, but rather would stress the importance of not delaying the booster injection."

PROVENZANO, R. W., et al. Pertussis Immunization in Pediatric Practice and in Public Health. New England J. Med. 261, 10:473 (Sept. 3), 1959.

Irradiated Foods—If you are at all curious about the progress being made in preserving various kinds of food by irradiation then this review article is for you. Current work is mostly directed toward identifying all the foods that can

be so preserved and then in controlling or preventing flavor changes. "It is clear," the writer concludes, "that much more basic research needs to be done." That will scarcely come as a surprise to you.

ROBINSON, H. E. Status of Irradiation Preservation of Foods. Nutrition Rev. 17, 9:257 (Sept.), 1959.

If additional information is desired regarding the articles listed in this bibliography, please communicate directly with the publications in which they appeared; the addresses are furnished for your convenience.

Am. J. Nursing (American Journal of Nursing), 10 Columbus Circle, New York 19, N. Y.
Brit. M. J. (British Medical Journal), British Medical Association House, 19 Tavistock Sq., London, W.C.1, England.
Health Educators at Work, University of North Carolina School of Public Health, Chapel Hill, and the North Carolina College, Durham, N. C.
J. Chronic Dis. (Journal of Chronic Diseases), C. V. Mosby, 3207 Washington Blvd., St. Louis 3, Mo.
M. Officer (Medical Officer), Chronicle House, 72-78 Fleet St., London, E.C.4, England.
New England J. Med. (New England Journal of Medicine), Massachusetts Medical Society, 8 The Fenway, Boston 15, Mass.
New York State J. Med. (New York State Journal of Medicine), 386 Fourth Ave., New York, N. Y.
Nutrition Rev. (Nutrition Reviews), Nutrition Foundation, Inc., Chrysler Bldg., New York, N. Y.
Nursing Outlook, American Journal of Nursing Company, 10 Columbus Circle, New York 19, N. Y.

Journals Wanted

The Association has received several requests for the January, 1958, and January and February, 1959, Journals from persons who bind the magazines. These persons and the Association would be grateful if members having no use for these particular issues would make them available to others. The magazines should be sent to the Association office at 1790 Broadway, New York 19, N. Y.

CREDIT LINES

The Journal cannot furnish copies of items mentioned in Credit Lines. Please send requests to the addresses given.

Community Action in School Health

The Tulare County (Calif.) School Health Advisory Board (A.J.P.H. June, 1958, p. 802) now publishes an information sheet about its functions, membership, accomplishments, operations, budget and history. It leads one to conclude that this has been an active, productive voluntary organization, one "established to more closely coordinate efforts toward improving the health of children" in that community. With three published booklets to its credit, it is now preparing its school health program kit to be issued in 1961. Public health personnel engaged in school health and community organization may procure the information sheet (two mimeographed pages) from the board's secretary-coordinator, Burt M. Kebric, Ed.D., 202 County Civic Center, Visalia, Calif.

A First

In September New Jersey started issuing "Added Years," the newsletter of the state's Division of Aging, recently transferred from the Department of Health to the Department of State. The division concerns itself with the "mental and physical health, housing finances, employment, rehabilitation, education, and recreation" of senior citizens. "Added Years" emphasis is on community level activity—witness its news of a conference in Hunterdon County and of the Paterson study "apparently the first research project of its kind in the country where a city surveyed the health, nutrition, employment and housing needs of its older people." Available from the Department of State, Trenton 25, N. J. The division also has a limited number of conference kits left over from the April Governor's Conference on Aging, and copies of the State Health Department's August issue of "Public Health News," devoted to that conference. Governor Meyner recently called it "the best attended conference of its kind ever held in the United States."

Extending the Life of a Meeting

The American Water Works Association's Membership Promotion Committee has made a 15-minute film, "What's in It for Us?," in the form of a newsreel documentary of the association's 79th annual conference in July. AWWA members unable to attend that conference will have the opportunity to see the meeting through this movie when they attend their section meetings in the coming months. "The film, designed to encourage water utility managers and others in the industry to actively participate in the Association and its annual conferences, shows many of the highlights of the 1959 meeting from time of registration to the annual banquet." For organizations interested in this promotion technic, loan arrangements through Director of Advancement, American Water Works Association, 2 Park Ave., New York 16, N. Y.

A Health Department's Heritage

The September issue of "Florida Health Notes," itself an old-timer—1892—spans the years before and since the State Board of Health's founding in 1889. Well chosen illustrations — the engraving showing the fumigation of a mail car, a photograph of the watch

presented to the first state health officer "in recognition of his gratuitous services to the city of Jacksonville during the yellow fever epidemic" (which finally convinced a reluctant legislature of the importance of financing a state-level department) and others fill out the brief, highlighted story of the Florida Board of Health's past. This is an example of what health departments with an eye to public support for their programs of the future can do to stimulate interest in historical backgrounds.

Child Accidents

Interested persons may have missed some or all of the following publications on child accidents, "the number one threat to the life and safety of this nation's children." This quotation is from "Accidents and Children," the 19-page Children's Bureau Folder No. 48-1959. Published by the same, a broadside called "Child Health Today—A Good Time to Cut Down on Accidents" carries nine articles on this subject (May, 1959). The August, 1959, Statistical Bulletin of the Metropolitan Life Insurance Company presents an article and tables on accidents and mortality from them among preschool children—motor vehicle accidents accounting for 31 per cent of these deaths. A toy safety campaign (toys include miniature cars which can go 35 mph) is launched in writing in the fall 1959 "Home Safety Review," published by the National Safety Council. Finally, the May and June issues of "Hartford (Conn.) Health Bulletin" are among recent good examples of how local health departments can participate in child accident prevention campaigns through the written word.

Water Recreation Safety

Health personnel with responsibilities for teaching personal safety in, on, and under water may take advantage of the following ideas for their next year's programs.

The Connecticut State Department of Health's "Weekly Health Bulletin" of July 20, 1959, features boat safety in "Pedestrian Shuffle—Dangerous Afloat," including "rules of the road" for powered vessels. More on the same: the greater Atlanta chapter of the American Red Cross experimented this past summer with "Minnie, the Talking Boat," an empty boat, anchored mid-stream, which broadcasts safety instructions to boat owners through a concealed loud-speaker "in a delightful Southern accent."

As to in and under-water health education, "Today's Health" in August tells of some of the health hazards of a popular sport—skin diving—and how to avoid them. And just for the record, the National Swimming Pool Institute predicts that "there will be 70,000 new swimming pools this year" in the United States; a busy summer 1960 is in store for health and safety educators and sanitary inspectors.

Film on Hearing Rehabilitation

The American Hearing Society announces its new film, "The Glass Wall," described as treating with the effects of rehabilitation services on the lives of five persons with the problem of impending deafness. One person "chose to remain on the lonely, silent side of the glass wall." This 16 mm, 29-minute sound, color movie is available on loan, free from the society's headquarters, 919 18th St., N.W., Washington 6, D. C. Narrator is the actor Paul Newman.

San Diego Employees Prepare for Retirement

A five-year preretirement program is being carried on by the City of San Diego, Calif. It starts with a questionnaire to those who are within five years of retirement. The purpose is to stimu-

late their thinking and to help plan meetings and is followed by a personal interview. Every city employee attends five, two-hour meetings for each of the five years preceding retirement. The first session deals with retirement benefits, others with health, income, service to others, and leisure time activities.

A questionnaire is again filled out at the beginning of the last year before retirement as a means both of evaluating the program and of uncovering areas in which the worker needs additional guidance. As this program builds up a history it should develop some guides to preretirement counseling.

Food Contamination by Birds

"Sanitation Aspects of Food Contamination by Birds" has been prepared by Kenton L. Harris for the National Pest Control Association to aid in preventing contamination of human food by birds, which the author suggests needs attention as well as prevention of such contamination by rodents and insects. The seven-page statement includes several good photographic illustrations. NPCA, 250 West Jersey St., Elizabeth. Free.

Coordinating Health Services

The raison d'etre for a study now being carried on by the New York City Department of Health is stated thus: "Changes in the needs and resources for health pose many problems of integration and coordination of services. Unless these problems are solved, the many forms of health protection and care available to and used by the members of a family are likely to be obtained with little regard to the health needs of that family and with slight if any attention to the economy and the efficiency with which the health personnel, equipment, and facilities of the community are used. Moreover, costly gaps and duplications are likely to occur in the successive timing and use of preventive, diagnostic, curative and rehabilitative services."

In preparation for this study of the patterns and sources of health and medical services received by industrial workers and their families a comprehensive bibliography divided into five major sections was prepared. This has been published in "Industrial Medicine and Surgery" and has been reprinted in a single bulletin. Its purpose is to be "useful to many persons who may need prompt or frequent access to source material on the origins, aims, and operations of health programs in many parts of the United States." Its title is "The Coordination of Care and Public Understanding and Acceptance of Health Services." Its authors, Leona Baumgartner, M.D., and Margaret C. Klem, respectively, commissioner of health and consultant, Medical Care Programs, New York City Department of Health, 125 Worth St., New York, N. Y., from which the bibliography may be obtained.

Spiking Old Ideas About Retarded

In "How Retarded Children Can Be Helped," some encouraging developments about retarded children are reported. A far larger number than was previously supposed can be trained and educated. It is estimated that there are about 30 retarded children out of every 1,000. But 25 of these 30 can learn to manage their own affairs and only one will be seriously retarded as to require nursing attention.

Three "old wives" tales about retarded are categorically exploded—most retarded need not be confined to institutions, they have no more, and probably fewer, criminal instincts than the rest of us, and they are not predetermined sex delinquents.

But problems, nevertheless, exist—chiefly the organization of community services for diagnosing the retarded and providing training and recreation serv-

ices for them and guidance for their parents. Only 70 clinics in the entire country serve these children, only 110,000 of 1,000,000 are in special classes. Here, too, the aging population may swell the problem. The retarded, too, live longer; if not provided with maximum facilities for adjustment there will be large numbers who need care once they have outlived their parents and no longer are cared for in their own homes.

The author of this new Public Affairs Pamphlet (No. 288) is Evelyn Hart, who is also the author of "Making the Most of Your Years" (No. 276). Illustrations, simple, appealing, and in color are by Elizabeth D. Logan. Public Affairs Pamphlets, 22 East 38th St., New York 16, N. Y.; 25 cents, reduction for quantity orders.

Migrant Labor Is Citizenry, Too

The recommendations of a Mid-American Conference on Migratory Labor, held in April, 1959, are now available. They appear in the April-June issue of "Migratory Labor Notes," an irregular bulletin of the President's Committee on Migratory Labor. The conference deliberations took off from the principle that the migrant is essential to our agricultural economy and "is entitled to the facilities, services, and privileges, which are the rights of any citizen."

The 48 recommendations of the conference have to do with children and youth, housing and sanitation, public health and public assistance, employment, and governmental and community responsibilities. Mandatory housing and sanitation codes, joint planning by local and state medical societies and health and welfare departments to provide such services as adequate housing and sanitation, supervision of well children, prenatal and postnatal clinics, hospital and medical care, immunization, reporting of communicable disease, screening and follow-up care to prevent spread of contagion among the group and the community, continuity of care as migrants move with the use of uniform health records and referrals to new areas are among the recommendations.

Migrant committees are recommended for all states that use migrant labor. It is also recommended that this Mid-West Conference be made permanent. The issue also includes legislative notes. Bills requiring crew leaders to keep payroll records and give wage statements were defeated or died in two state legislatures. In Texas, bills to authorize the Health Department to issue rules for labor camps, to regulate transportation of workers, and to license and regulate crew leaders died in either the Senate or the House.

The conference was sponsored jointly by the Council of State Governments and the President's Committee on Migratory Labor. The latter is made up of the secretaries of labor, agriculture, interior, and health, education, and welfare, as well as the administrator of the housing and home finance agency. The first named is chairman. The recommendations are to be found in Migratory Labor Notes No. 9 and the entire conference report may be obtained from the Secretariat, President's Committee on Migratory Labor, U. S. Department of Labor, or the Council of State Governments, 1025 Connecticut Ave., Washington, D. C.

Health Philanthropy Burgeons

The American Association of Fund Raising Counsel, Inc., has recently issued its 1959 and fourth edition of "Giving, USA" which is described as "a compilation of facts related to American philanthropy." Who gives what, for what purpose, is essentially answered in this 48-page pamphlet. Nearly 80 per cent of the approximately $7,130,000,000 philanthropy was given by individuals. Reli-

gion is estimated to have received 51 per cent, welfare 18 per cent, health 14 per cent, and education 12 per cent. Philanthropic expenditures for health care increased from $71 million in 1940 to more than $800 million in 1958. American philanthropy is said to represent 44 per cent of world philanthropy. Not only is this a report of giving, but it is also a current social commentary.

The American Association of Fund Raising Counsel, Inc., 500 Fifth Avenue, New York, N. Y. No information as to cost.

"Special Report: Medical Care"

The May issue of Parke Davis and Company's "Patterns of Disease" presents pictures of many of today's urgent medical care problems, basing its information on well accepted current sources. For the scholar, this pamphlet will act as a refresher—in more ways than one. It makes excellent use of color in its presentation of statistics. It would offer the freshman in the study of medical care as clear an orientation toward some of its major modern problems as five pages allow. Sections of this report deal with adequacy of care facilities, who the patients are, where, why, and in what volume they visit doctors, the supply of physicians, the disorders ending in a hospital most often, costs of medical and hospital care and some facts about health insurance. This issue also carries a "round-up of communicable diseases across the nation."

For Dental Health Education

"The Day That Susie Lost Her Smile" is a new "short-short" film on dental health. The running time of the 16 mm sound color film is nearly four minutes. Stressing after-meal brushing, it seeks to teach proper brushing procedure. A script in rhyme accompanies the film which is available without charge from the Educational Service Department, Bristol Myers Company, 45 Rockefeller Plaza, New York 20, N. Y.

Sanitation Still Important

To 200 persons selected at random in Chester County (main line, Philadelphia) about two years ago, "sanitation was the first order of business" in the health services of the county. More than half the lay persons answering the questionnaire put control of sewage and purity of drinking water as the first need, nearly a fourth, control of stream pollution. Next in importance were control of rubbish and garbage and cooperation of community agencies in providing medical and dental care for the general public, indigent and nonindigent.

By way of indicating the extent to which the public has no clear concept of what is meant by health needs or services, more than a fifth of the lay listing of the three chief health needs were outside the scope of public health. The answers included such items as "too many saloons" and "shorter working hours for more people." Its particular significance, beyond the data collected, is in development of a "do-it-yourself" method of opinion sampling for the local health officer.

Lewis D. Williams, M.D., then district medical director, made the study. He might be willing to share the report of it with others. He details quite fully the means he used to protect objectivity; 6 S. Church St., Westchester, Pa.

Worth Acquiring

"Research Relating to Children," August, 1958-February, 1957, is the 9th Bulletin of the Children's Bureau Clearing House on this subject. It represents the beginning of the second decade of collection and reporting of research about children. The volume includes a brief description of some 300 current

studies, a few of them that "are more or less continuous." In addition, the organizations, the investigators, the geographical distribution, and an alphabetical index provide the material by which those proposing studies can find out what is currently "cooking." The authors warn that the publication "is only as complete as you are willing to make it" and they provide both a report form for ongoing research and a form for listing other investigators carrying on relevant research. A free copy of the bulletin is sent to the investigator. Others may be obtained from the Government Printing Office, Washington 25, D. C.; $1.

Responsibilities of state departments of education and health for school health services is a first revision of a 1951 pamphlet. It represents a joint statement by the Council of Chief State School Officers and the Association of State and Territorial Health Officers, "the sole objective" of which is "to improve school health services and their administration." The keynote principle is that "Education and health departments each have important contributions to make to health services for children and youth of school age. . . . Both departments have personnel whose skills are needed in the solution of school health problems."

This revision should be in the hands of health department personnel dealing with school health services, whether with full responsibility or with responsibility shared with education personnel. Council of Chief State School Officers, 1201 16th St., N.W., Washington 6, D. C.; 35 cents, reductions for quantity orders.

"First you say it isn't so—that scratchy sensation in your nose and throat, the dull ache in your bones; and then, Ka-choo-oo! Now you know." This light phrasing, expressing an almost universal human reaction, opens and sets the tone for "Old King Cold," a shirt-pocket size pamphlet for distribution to any employee group. Even those of us responsible for educating others to good health practice may find that the booklet's rules for prevention, for "Cold Comfort," and "Some Cold Facts" will remind us, too, to "wear rubbers." Single copy, 15 cents; quantity discounts, Order Department, American Medical Association, 535 N. Dearborn St., Chicago 10, Ill.

"Cholesterol as Related to Atherosclerosis: A Review of the Literature, July 1957 to July 1958"—The extensive interest in and discussion of serum cholesterol as related to atherosclerosis is indicated by the nearly 200 articles in scientific journals within one year listed in this bibliography. A text summarizes the current findings under such headings as epidemiology, heredity, diet, cholesterol metabolism, age and sex, etiology, among 10 others.

Published "as a public service for those interested in this subject" by the Cereal Institute, 135 S. LaSalle St., Chicago 3, Ill.

"Directory of Federal and Private Agencies Working with or for the Handicapped" in the United States is designed "to facilitate a continuing exchange of information between U. S. organizations and their counterparts in other countries, on techniques, treatments, devices, and procedures in rehabilitating crippled children and adults and employing the handicapped of all nations." One would suppose it to be as useful in facilitating such exchange among agencies themselves. Prepared by the Committee for the Handicapped with the Cooperation of the President's Committee on Employment of the Handicapped.

The services of 56 national organizations are listed, including the American Public Health Association with particular reference to its series of guides on handicapping conditions in children.

The Committee for the Handicapped of which Major General Melvin J. Maas, USMCR (Rtd.), is chairman is made up of individuals among whom are representatives of some 20 national or international organizations dealing with the handicapped. The directory was prepared as a part of its "People to People Program." Committee for the Handicapped, Room 205, 726 Jackson Place, Washington, D. C.; 25 cents.

Annual Reports

"Cincinnati's Health" is the 1958 annual report of that city's Health Department. It is a workmanlike report telling the story without either apology or boast. Among the highlights recorded is the establishment of a "phage testing" laboratory jointly with the County and State Health Departments, the local Hospital Council and Academy of Medicine. "One of the first to be established on a city-county-wide basis" it is reported. Another modern highlight is the citizen's Radiation Advisory Committee which has developed a plan for radiation control in case of fire. A state radiation law for presentation to the Legislature was also under active study. Carl A. Wilzbach, M.D., is the city health commissioner.

In Madison, Wis., in 1908 one official certificate cited "extreme old age" as the cause of death for a 77-year-old. With a happy note to the effect that five decades have made such an expression outmoded, the city's Department of Public Health introduces its annual report, "1958 . . . Our 50th Year." The report concentrates, however, on the period 1954-1958. Early in its 30 pages it establishes that Madison is growing younger. It also points with pride to its low infant death rate "the single most sensitive of all measures of the state of our community health."

The report's only picture is on the cover—an air photograph of the city. Inside it presents pages of statistics. But with a difference. Its authors have obviously written with the care and feeding of the public always in mind. Explanations of figures and table are clear, brief and lively. A refreshing sample:

> "Communicable Disease? Why Worry?" True, the sting is largely drawn—by effective prevention, by early medical care, and by antibiotics or "wonder drugs." However, (etc.)

This report was presumably inexpensive to produce; it is stapled on the short side of its mimeographed 8½ x 11 inch sheets. Its appearance is made attractive by the use of opaque paper in a variety of pastel colors.

To an honest measure of reporting "lost ground" over a two-year period and a brief on what is really ground gained during the same time, add good art work and you have the biennial report of the Jefferson County Department of Health, Birmingham, Ala. Samples of progress: formation of a Citizens Committee on Indigent Medical Care, a new housing code under the jurisdiction of the Health Department, beginning of an aftercare program for mental patients, creation of a Citizens Advisory Committee upon recommendation of the County Medical Society, becoming part of the national air sampling network of Public Health Service. A forward-looking agency has produced a public-minded report, calling it "A Close Look at Public Health." Photographs and a bold color in its first half are the storytellers. They narrate well. For example, a brief caption to the effect that "rabies is a serious problem" is printed beside a dramatic close-up of a rabid dog biting a bar in his cage. The balance of the report presents "significant highlights" for each of the agency's divisions, with minimum use of statistical tables for easy, informative reading.

NEWS FROM THE FIELD

WHO News

Sanitation at Airports

The main group of problems discussed in the First Report of the Expert Committee on Hygiene and Sanitation in Aviation are: water supply and distribution, including delivery and loading onto aircraft; food and milk sanitation; and sewage and waste disposal. Prompted by a concern that international airlines can be disease carriers and that the health of passengers and particularly airflight crews should be protected, the committee's report includes a guide on the subject for the use of national and local official health agencies. The report indicates the sources of more detailed information. Committee chairman and rapporteur, respectively, for this meeting of the committee were: Malcolm C. Hope, chief, General Engineering Program, Division of Sanitary Engineering Services, Public Health Service, and Sir Harold E. Whittingham, consultant in aviation medicine, British European Airways. Technical Report Series, 1959, No. 174; also in French and Spanish. Columbia University Press, 2960 Broadway, New York 27, N. Y.; 60 cents.

A Second Zoonoses Report

Domestic animal reservoirs of zoonoses continue to be a considerable danger for man in many countries. More than a hundred of these diseases and infections naturally transmitted between vertebrate animals and man are now recognized throughout the world as a persistent public health threat.

The report of a Joint WHO/FAO Expert Committee presents recently accumulated information on the prevention control and eradication of major zoonoses, including salmonellosis, leptospirosis, animal tuberculosis, anthrax, psittacosis, Q fever, arthropod-borne viral encephalitides, hydatidosis, and several other zoonoses of importance.

The committee advises that a study of the possible effect of animal influenza on human beings in 25 countries be continued and expanded. It also points out the need for clarifying the natural history of specific disease agents in view of the possible emergence of new zoonoses.

Joint WHO/FAO Expert Committee on Zoonoses, Second Report. Columbia University Press, 2960 Broadway, New York 27, N. Y.; 60 cents.

Mentally Ill and Society

The premises of social psychiatry are not new but insufficiently appreciated according to the Seventh Report of WHO's Expert Committee on Mental Health called "Social Psychiatry and Community Attitudes." Progress in the field makes it possible to keep mental patients in social contact with the community, to rehabilitate them, provide them with a social function and with some economic value in society. But better ways of informing and educating the public to these possibilities are necessary for improved public cooperation. The committee examines the reasons communities adopt their attitudes not only to the patient but to psychiatrists and the therapy and facilities they use. The committee gives reasons for extending the scope of outpatient treatment and recommends further research for purposes of obtaining more knowledge of why communities are intolerant of the mentally ill. Technical Report Series 1959, No. 177; also in French and Spanish. Columbia University Press, 2960 Broadway, New York 27, N. Y.; 30 cents.

For the History-Minded Reader

The September/October issue of "World Health" draws a portrait of the

physician from antiquity to the Industrial Revolution, "from the quack—the doctor becomes a man of science." This issue begins with a modern doctor's encounter with the "prehistoric" and ends with a story on the progress of medicine in the last five generations and the "birth of a doctor" at Leyden University.

WHO takes the occasion to point out that it will award its 10,000th fellowship by December this year. From 1948-1959 most fellows have been on the staff of national and local health services, but one-tenth are academic personnel. A quarter of the fellows were women. Major study subjects: health services (59 per cent); communicable disease control (28 per cent); medical education, clinical, and basic medical sciences (13 per cent).

Research Office Moves

In October the Tuberculosis Research Office moved to Geneva from Copenhagen. The new mailing address is: Tuberculosis Research Office, Tuberculosis Unit, Division of Communicable Diseases, World Health Organization, Palais des Nations, Geneva, Switzerland.

Certification Board Meets

The American Board of Veterinary Public Health held its annual meeting in Kansas City, Mo., on August 25, 1959, in connection with the annual meeting of the American Veterinary Medical Association. The session was limited to a business meeting during which the following officers for 1959-1960 were elected:

President—Martin D. Baum, D.V.M., M.P.H., Denver, Colo.
Vice-President—Stanley L. Hendricks, D.V.M., Des Moines, Iowa.
Secretary-Treasurer—Colonel Charles H. Snider, Washington, D. C.

A Centenary and Other Dental News

"A Century of Health Service" is on the 1959 banners of American dentists and was the theme of the ADA's national convention held in New York's Coliseum, September 13-18. Paul H. Jeserich, D.D.S., Ann Arbor, Mich., is the ADA's 1959-1960 president. Charles H. Patton, D.D.S., Philadelphia, is president-elect.

Preceding the 100th anniversary session, speakers from 16 countries gathered for the International Conference on Dental Public Health, September 11. Sponsors were the ADA, the Commission on Dental Public Health of the Federation Dentaire Internationale, and the American Association of Public Health Dentists. Henry van Zile Hyde, M.D., assistant to the Surgeon General for International Health, Public Health Service, was the luncheon speaker. Carl L. Sebelius, D.D.S., M.P.H., director of dental health, Tennessee Health Department, was general chairman of the conference.

Complimenting the ADA on the centennial, the New York State Department of Health published a 41-page special review, "Dental Public Health in New York State," covering such topics as "A Primer on Dental Service Corporations," dental caries experience after fluoridation (with a fluoridation map of the state), administration in dental public health, orthodontics in public health, and implications for dentistry of an aging population.

The "Proceedings" of the 1959 biennial conference of the State and Territorial Dental Directors with the PHS and the Children's Bureau were published shortly before the ADA convention. The directors had met in Washington, D. C., April 21-25, to discuss the application of principles of behavioral sciences to dental public health programs. Eight papers are presented in the "Proceedings," now available. PHS Publication No. 698, Division of Dental Public Health, Government Printing Office, Washington 25, D. C.

The ADA announced in July a "comprehensive group dental care plan," said

to be a first, and also to "encourage early dental treatment." The plan, with deductible and coinsurance features, covers the 1,200 employees and their dependents of the Dentists' Supply Company, York, Pa., which bears the entire premium cost. Annual dental examination and other work including orthodontics are among the benefits. Developed with the cooperation of the ADA and the Pennsylvania Dental Association and underwritten by Continental Casualty, the plan allows free choice of dentist.

State Health Department Moves

The State Health Department of Utah has a new home, a symbol of both the state's and the department's growth. After occupying offices in the capitol building for years, the Health Department moved to new quarters at 45 South Douglas Boulevard, Salt Lake City, in July.

Eligibility for Trudeau Society

The American Trudeau Society, now concerned with fighting all respiratory diseases as well as tuberculosis—its prime target—has recently amended its by-laws to admit persons without an M.D., Ph.D., or equivalent degree whose training is in scientific fields not strictly medical. Scientists and teachers in related disciplines "will, at the discretion of the Council of the Society, be welcomed into its ranks to assist in its new and broadened areas of activity."

A Federal Radiation Council

A recent presidential executive order created the Federal Radiation Council. This group, made up of the secretary of health, education, and welfare who is chairman, the secretaries of commerce and defense, chairman of the Atomic Energy Commission, and the President's special adviser on science and technology serves as an advisory group to the President on radiation problems.

Each of the constituent agencies has assigned technical staff to the new council. Thus, Donald R. Chadwick, M.D., chief of the program operations of the Public Health Service's Division of Radiological Health, has been assigned as executive secretary of the council. He will be stationed in the office of the special assistant to the President for science and technology, George B. Kistiakowsky, M.D., in the Executive Office Building.

American Hospital Association

The AHA held its 61st annual convention August 24-27 in New York City's Coliseum. Registrants had a choice of 48 program sessions to attend. Among the speakers were: Elmo Roper, who found in a recent study that people generally admire the hospitals' technical performance "but feel the human side of hospital care is frequently given short shrift"; John V. Connorton, executive director of the Greater New York Hospital Association, who defined the position of his member hospitals in the recent labor crisis; Leona Baumgartner, M.D., New York City Health commissioner, and President of the APHA, who told a group of AHA's women's auxiliaries of her recent tour of medical facilities in Soviet Russia.

John R. Mannix, executive vice-president of Blue Cross of northeast Ohio, proposed the establishment of an American Blue Cross as a means of preserving and improving the nation's voluntary health system. Noting that many Blue Cross plans had lost their pioneering spirit he suggested that a single nationwide Blue Cross would help Blue Cross to "return to the principles of extending the broadest possible coverage to everybody . . . on a community rate basis."

Alumni groups honored Ira V. Hiscock, M.D., retiring chairman of the Department of Public Health, Yale Uni-

versity, hailing him as a "world citizen whose name has become synonomous with public health," and John R. McGibony, director, School of Hospital Administration, University of Pittsburgh, leaving for New Delhi as consultant to the Government of India. The AHA's Distinguished Service Award for 1959 was presented to the executive director, Edwin L. Crosby, M.D., in recognition of outstanding leadership in hospital administration.

AHA, departing from precedent, voted to include in its listing of hospitals meeting the criteria of the association those hospitals where osteopaths work under the supervision of medical doctors.

Incoming president was Russell A. Nelson, M.D., director, Johns Hopkins Hospital, Baltimore. He succeeds Ray M. Amberg, director, University of Minnesota Hospitals. President-elect is Frank S. Groner, administrator of the Baptist Memorial Hospital, Memphis, Tenn.

Keeping the Physician Up to Date

"Medicine Is a Lifelong Study" was the theme of a Second World Conference on Medical Education attended by 800 participants from more than 60 countries in Chicago recently. Discussion was directed primarily toward educational activities in which a physician might engage following his basic professional preparation. Although clinical medicine was the chief focus of the discussions, it was clear that preventive and social concepts could not be ignored—and they found their way into practically every topic.

Agreement was universally expressed that because undergraduate medical education alone does not prepare the physician to assume the responsibilities of patient care, further training is necessary. This graduate education should be both academic and practical. Many hospital programs are now offering a structured program under the guidance of a full-time director of medical education. In some areas of medical science and in public health university courses leading to advanced degrees have been established.

One section of the conference discussed practical aspects of recruitment for graduate study and support of graduate students during the training period. The length of time of preparation is now so extensive that prolongation into graduate studies requires some financial inducements for promising young persons.

The major portion of the conference was devoted to exploration of ways and means of bringing further educational benefits to the practitioner who has already completed his formal studies. This postgraduate aspect of the "Lifelong Study" emphasized such traditional methods as short-term courses, conducted either at a central point, such as a medical school, university hospital or, peripherally, at local facilities by a visiting staff. Rotating services with colleagues or a replacement panel were among the suggestions for making it possible for practitioners to leave their patients for the few days needed for a postgraduate course.

Of great interest was the alternative of bringing the material to the doctor. With the development of modern audiovisual technics, a number of experimental approaches were reported to the great interest of the audience. Most popular was closed-circuit television with its unlimited possibilities of presenting clinical material to the physician many miles away. Another interesting device is the tape recording of clinical histories and case discussions to which the physician can listen while driving in his car.

In summary, the conference pointed up the desirability, even necessity, of providing graduate and postgraduate opportunities to physicians and explored how this may be done.

J. L. Troupin, M.D., associate secretary, Committee on Professional Educa-

tion, as representative of the American Public Health Association, took part in the discussions. The conference was sponsored by the World Medical Association, the World Health Organization, the Council for International Organizations of Medical Sciences, and the International Association of Universities.

New Prehospital Home Care Program

A unique program in home care to prevent possible hospitalization except in acute conditions has been inaugurated by the Jewish Chronic Disease Hospital, Brooklyn, N. Y., for victims of long-term diseases. Supported by a grant from the National Institutes of Health, the hospital will conduct a five-year study to determine the feasibility of caring for victims of strokes in their homes with some of the services ordinarily given in the hospital.

According to Arthur Feigenbaum, executive director of the hospital, if study results so indicate "hospitals throughout the country which have no facilities for long-term patients may be encouraged to undertake similar programs and so offer care and treatment to individuals who are languishing in their homes while waiting for months and even years to be admitted to a hospital."

The principal investigator of this project is Joseph B. Rogoff, M.D., the hospital's director of physical medicine and rehabilitation. The Jewish Chronic Disease Hospital is working for a closer relationship with other hospitals, public health nursing agencies, family agencies, and welfare services in order to carry out this program effectively.

Controls for New Inland Seaports

With the opening of the new St. Lawrence Seaway, many inland United States and Canadian cities became seaports overnight. The seaway is bringing ships, people, and trade goods from foreign lands, "but it is not likely to bring in any serious communicable diseases," according to an article in "Minnesota's Health" (August-September) published by the State Department of Health. This issue describes how the United States and Canadian governments act together to prevent the entry of diseases into their countries via these new seaports on the seaway. At Montreal, Public Health Service inspectors work with Canadian officials to apply the quarantine measures of WHO's International Sanitary Regulations to all ships and passengers entering the seaway. Upon receipt of a "Certificate of Pratique" the ship may then gain entry into the inland seaports. In American ports, such as Duluth-Superior, federal customs, immigration, and naturalization services join official health agencies in applying further quarantine standards to the ship, crew, and cargo.

Physician, Heal Thyself

The Berkeley (Calif.) Health Department has undertaken a project to encourage the use of seat belts in the private cars of its own employees. Its "Operation Seat Belt" is described in the July 1, 1959, issue of "California's Health" "in the hope that this information will be of use to other interested groups." One of the project's objectives is to provide "a demonstration for health education purposes." Since private cars are used for city business, a group purchase plan was devised to reduce the costs of belts for the health department employee. An interesting story of overcoming staff resistance in this voluntary program is told. Eighty-five per cent of the employees with private cars in the department now have safety belts in their cars.

Secretary of Health, Education and Welfare Arthur S. Flemming has signed "an order directing that seat belts be installed as rapidly as possible in all vehicles owned . . . by the department."

The PHS is cooperating with the National Safety Council, the American Medical Association, and the automobile industry to promote the use of seat belts by all car owners.

In 1958 the American Public Health Association adopted a resolution urging "the equipping of all official city, county, state and federal automobiles with seat belts which meet acceptable standards" and encouraging "the wider use of seat belts by the general public." In July of this year Berwyn F. Mattison, M.D., executive director of the APHA, testified on this subject before the Subcommittee on Health and Safety, House Committee on Interstate and Foreign Commerce.

Chemists and the Public Health

The American Chemical Society met September 13-18 in Atlantic City for its 136th semiannual national convention. Chemistry's recent contribution and roles in protection against radioactive strontium, diets for the aging, attacks on cancer and air pollution, and methods for detecting components of fallout debris, were among the topics for reports. The society announced that its Garvan Medal for distinguished services to chemistry by a woman chemist would go to Dr. Mary L. Caldwell, professor emeritus of Columbia University, "for her contributions to the understanding of the action of the body enzymes in converting starch into sugar." Mr. Watson Davis, director of Science Service, Washington, D. C., is to receive the society's James T. Grady Medal for distinguished reporting of chemical progress. Both awards are to be made at the April, 1960, meeting of the society.

Worthy of note, the Mellon Institute has increased its support of chemical research in the form of its new Bushy Run Laboratories. These are housed in two new buildings 25 miles east of Pittsburgh, one devoted to radiation research and the other to investigations into the health and safety of all persons engaged in making, transporting, and using chemicals.

Nurse Holds the Fort in Moscow

Since expected fellow experts on American public health did not get to Moscow to assist her at the recent American National Exhibition in Moscow, Rose Ernsberger, nurse officer, USPHS, found herself alone with hundreds of Russians, from 11 a.m. to 9:30 p.m. every day. Mrs. Ernsberger answered the eager questions of her audience, such as the following:

"Are American policemen trained to deliver babies on the streets because American mothers can't afford to pay for the doctors?"

"Isn't it true that in America if a person has an acute attack of appendicitis and doesn't have the money on him to pay beforehand for the operation, he just has to die?"

"Why is it that in America if a worker has an industrial accident he is just thrown out of the plant for good?"

Typical of her answers, which, according to reports, most Russian visitors believed:

"There are 26 million families in the United States with hospitalization insurance. Free medical care is given by government hospitals, private clinics, and a variety of other public and private institutions. The decision whether a patient pays or not is made by public health nurses and social workers. Anybody in the United States can get medical care, whether he can pay for it or not."

Mrs. Ernsberger went on a well deserved vacation after a month of answering a bewildering array of questions about American treatment of cancer, heart disease, hypertension, bronchial asthma, stomach ulcers, abortion permits, sterility cures, and aid to expectant mothers.

Mental Illness Control in Georgia

The Georgia Legislature has assigned the state's responsibility for the care of

its mentally ill to the jurisdiction of the state's Board of Health. As a result, the administration of the Milledgeville State Hospital was transferred in April to the Georgia Department of Public Health. The August issue of "Georgia's Health" is devoted entirely to a report of the health department's activities and experiences during the first four months of its administration of this hospital. Although written for public consumption, the report would be helpful to interested medical care administrators. It covers the health department's accomplishments in reorganization and setting up control procedures, its plans for admissions, physical plant, staff, and training program, and its problems in improving staff and in building repairs.

PERSONALS

AGNES E. M. ANDERSON, R.N.,† member of the Board of Directors, American Nurses' Association, and president, American Nurses' Foundation, has been appointed executive secretary, Pennsylvania Nurses' Association, succeeding BARBARA SCHUTT, resigned to become editor, American Journal of Nursing.

JACK RALPH AUDY, M.D., former chief, Scrub Typhus Unit, Kuala Lumpur, Malaya, has been appointed to succeed KARL F. MEYER, M.D., Ph.D.,* as director, University of California Medical School, George Williams Hooper Foundation for Medical Research, as well as professor of tropical medicine and human ecology.

MAUDE C. BAILEY, M.A.,* former supervisor of public health nursing, Charleston County Health Department, has been appointed state supervising nurse, South Carolina State Board of Health.

L. LARAMOUR BRYAN, M.D., former acting commissioner, New York State Department of Mental Hygiene, is now assistant commissioner of the department.

MIGUEL E. BUSTAMANTE, M.D., Dr.P.H.,† has been appointed undersecretary of public health, Mexican Ministry of Public Health and Welfare.

JOSEPH L. CAMP, M.D., former assistant director, Letchworth Village, has been appointed deputy assistant commissioner, New York State Department of Mental Hygiene.

JAMES H. CAMPBELL, former consultant on organization and administration, has been named Western regional representative, National Society for Crippled Children and Adults.

MAJOR MERCEDES M. FISCHER, R.N., M.P.H.,† ANC, former Army health nurse, Brooke Army Medical Center, Ft. Sam Houston (Tex.), has been appointed head, Health Nursing Branch, Preventive Medicine Division, Office of the Army Surgeon General, Washington, D. C.

HESSEL FLITTER, who directed the league's study on the cost of nursing education, has been appointed director of a newly formed research and studies unit, National League for Nursing.

ARMAND FRAPPIER, M.D.,* dean, School of Hygiene, University of Montreal (Canada), has been named chairman, Montreal Board of Health.

STANTON GARFIELD, M.D., M.P.H.,† former fellowship program director and training officer, Public Health Service, has retired from the Service's Commissioned Corps.

LUCY GERMAIN, R.N., M.S., former director of nursing and nursing education, Harper Hospital, Detroit, has been appointed executive director, American Journal of Nursing Company, succeeding the late NELL BEEBY, R.N. PEARL MCIVER, R.N.,* retired as chief of the Public Health Nursing Service, PHS, has been serving as executive director for the past two years.

WILLIAM C. GIBSON, M.P.H.,* professor of public health engineering, has been appointed acting dean, University of Michigan School of Public Health, pending appointment of a successor to HENRY F. VAUGHAN, Dr.P.H.,* retired.

EUGENE A. GILLIS, M.D., M.P.H.,* medical director, Charlottesville (Va.) regional office of the Public Health Service, is on a four-month leave as Rockefeller visiting professor of public health administration, School of Public Health, American University of Beirut, Lebanon.

C. W. GOCKEL, M.D., M.P.H.,† former medical officer, Division of Malaria Eradication, Oberbayern, Germany, has been transferred to WHO headquarters in Geneva.

ALBERT V. HARDY, M.D., Dr.P.H.,* assistant state health officer, Florida, is in Geneva as a consultant to a WHO group studying acute intestinal disorders.

E. HAROLD HINMAN, M.D., M.P.H.,* dean, University of Puerto Rico School of Medicine, San Juan, has resigned to accept a position with the Public Health Division,

* Fellow.
† Member.

International Cooperation Administration. He has been succeeded by JOSEPH R. VIVAS, M.D., former chief of medicine and director, Gorgas Hospital, Canal Zone.

JUDITH HUBBEL, R.N., formerly with the Washtenaw County Health Department, is now a public health nurse, Shiawassee-Livingston District Health Department, Howell, Mich.

COLONEL AUBREY L. JENNINGS, USAF, MC, former Surgeon, Headquarters Command, is now director of professional services, Office of the Surgeon General, succeeding BRIGADIER GENERAL VICTOR A. BYRNES, (Rtd.).

EDITH A. JONES, M.S.,* chief, Nutrition Department, National Institutes of Health, and recent recipient of the McLester Award of the Association of Military Surgeons, has been elected to the Executive Board, American Dietetic Association.

PEARL L. KENDRICK, Sc.D.,* lecturer in epidemiology, University of Michigan School of Public Health, who pioneered in the work on the prevention of whooping cough, has retired.

JOHANNA E. KENNEDY, R.N., M.A.,† acting chief public health nurse since March, 1959, has been appointed chief public health nurse, New Jersey State Department of Health.

FRED C. KLUTH, M.D., M.P.H.,* former director, Training Division, Texas State Health Department, is now medical director, Southeast District, Allegheny County Health Department, Pennsylvania.

JOHN W. KNUTSON, D.D.S.,* has received the Henry Spenadel Award of the First District Dental Society in "meritorious recognition for his distinguished service to dentistry in the field of research and for his many years dedicated to nation-wide and world-wide public health."

EDWARD KRAVITZ, D.Sc.,* former associate in clinical pathology, Woman's Medical College of Pennsylvania, is now director and owner of the Newark Medical Laboratory, Newark, Del.

MORTON L. LEVIN, M.D., Dr.P.H.,* assistant commissioner for medical services, New York State Health Department, has retired.

LAWRENCE J. LINCK, LL.D., former executive director, National Society for Crippled Children and Adults, has been appointed executive director, National Association for Mental Health, New York City.

AUBREY MALLACH, M.S.,* recently returned from a six-year assignment in Israel as director-general of the American Joint Distribution Committee's program in that country, is now forum consultant, National Health Council, New York City.

RICHARD L. MASLAND, M.D.,† now assistant director, has been appointed director, National Institute of Neurological Diseases and Blindness, succeeding PEARCE BAILEY, M.D., who is now director of the institute's new International Neurological Research Program.

STANLEY P. MAYERS, JR., M.D.,† former regional director, Division of Local Health Services, Virginia Department of Public Health, has been appointed senior public health physician, Division of Local Health Services, New Jersey State Department of Health.

THEODORE J. MEDREK, M.D., former staff physician, Veterans Administration Hospital, Boston, is now a clinical investigator with the John L. Smith Memorial for Cancer Research (industrial), Chas. Pfizer & Co., Inc., which was established at Maywood, N. J., in 1957 by Pfizer in conjunction with the National Institutes of Health.

CARLOS MORA-MORA, M.D., of Bogota, currently undertaking postgraduate training in orthopedic surgery, Georgia Warm Springs Foundation, has been awarded the Bell Greve Memorial Fellowship for Rehabilitation.

ELIZABETH PEARSON, M.P.H.,* formerly public health educator, Nassau County Health Department, has been appointed education consultant, Office of Professional Education, New York State Health Department.

VIRGINIA C. PHILLIPS,† consultant nurse, Heart Disease Control Program, has been appointed associate state supervising nurse, South Carolina State Board of Health.

ROBERT E. PLUNKETT, M.D., assistant commissioner for tuberculosis control, New York State Health Department has retired after 36 years in the department.

COLONEL LAURENCE A. POTTER, M.D., M.P.H.,† former director, Department of Military Sciences, and chief, Academic Division, Brooke Army Medical Center (Texas), has been named assistant commandant, Army Medical Service School, succeeding COLONEL RAYMOND E. DUKE, transferred to Germany as Seventh Corps Surgeon.

J. HAROLD SLATER, formerly on the staff of the Republican Congressional Committee, has joined the Washington office staff, American Medical Association.

WALTER D. TIEDEMAN,* lecturer in milk and food sanitation, University of Michigan School of Public Health, and an inter-

* Fellow.
† Member.

national authority on food and milk control, has retired.

PROFESSOR CLAIR E. TURNER, Dr.P.H.,* has been awarded the Gold Medal of the Academy of Medicine of France and also the Great Cross of the Order of Merit of the West German Republic for distinguished service in the field of health education.

HENRY F. VAUGHAN, Dr.P.H.,* formerly health commissioner of Detroit (Mich.) for 27 years and, since 1951, first dean of the University of Michigan's School of Public Health, has retired.

DAVID R. WALLACE, D.D.S., M.P.H.,* former director, Division of Dental Health, Virginia State Health Department, is now coordinator of dental health, Division of Constructive Health Services, New Jersey State Health Department.

WARREN WEAVER, M.D., former vice-president for the natural and medical sciences, Rockefeller Foundation, has retired to become a vice-president of the Alfred P. Sloan Foundation concerned primarily with the scientific and medical research activities.

DONALD E. WILCOX, M.D.,† assistant director, Division of Preventable Diseases, has been appointed also epidemiologist, Kansas State Board of Health.

MILLIE YOUNG, M.D., former senior psychiatrist, Camarillo State Hospital, Calif., is now consultant psychiatrist for state mental health clinic services in the northern region, Alaska State Health Department.

DEATHS

ALFRED D. GREGG, M.D., C.P.H.,† county health officer, Henderson, N. C. (Health Officers Section).

JACOB M. BLOCK,† industrial hygiene engineer, Newark (N. J.) Health Department in July (Engineering and Sanitation Section).

JAMES P. COZZENS, M.D.,† directing supervisor of health services, Board of Education, Cleveland, Ohio (School Health Section).

R. B. H. GRADWOHL, M.D.,* director, Gradwohl Laboratories, St. Louis, Mo. (Laboratory Section).

FREDERIC M. KRIETE, M.D.,* deputy director, California State Department of Public Health on July 25, 1959, at the age of 46 (Mental Health Section).

JAMES D. MANNY, D.D.S., M.P.H.,† assistant professor of oral diagnosis, Seton Hall College, School of Medical and Dentistry, Jersey City, N. J. (Dental Health Section).

TERESA R. MURPHY,† school nurse, Ecorse Board of Education, Ecorse, Mich., on June 23, 1958 (School Health Section).

DOROTHY NOVOTNY† of Greenwich Hospital, Greenwich, Conn. (Laboratory Section).

DR. GUSTAVO PITTALUGA* of Havana, Cuba, an Honorary Fellow of the Association.

ALFRED E. SHIPLEY, M.D., D.P.H.,* public health consultant, Brooklyn, N. Y. (Public Health Education Section).

CORNELIUS P. RHOADS, M.D., D.Sc.,† director, Sloan-Kettering Institute, and professor of pathology, Sloan-Kettering Division, Cornell University Medical College on August 13 (Laboratory Section).

ROBERT C. WHEELER† of Barker & Wheeler, engineers, on August 26, 1959 (Engineering and Sanitation Section).

* Fellow.
† Member.

CONFERENCES AND DATES

State and Regional Public Health Meetings—November, December, and January, 1960:

California, Northern, Public Health Association. Palto Alto. November 5.

California, Southern, Public Health Association. November 6.

Connecticut Public Health Association. Wethersfield High School, Wethersfield. November 18.

Hawaii Public Health Association. Honolulu. November 10.

Mississippi Public Health Association. Robert E. Lee Hotel, Jackson. December 2–4.

Oregon Public Health Association. Court House, Eugene. November 3–5.

Washington Public Health Association. Port Angeles. November 2–3.

Meetings of Other Organizations—November, December, and January, 1960:

American Academy of Cerebral Palsy. Los Angeles, Calif. November 30–December 2.

American Medical Association. Clinical Meeting. Dallas, Tex. December 1–4.

American Medical Women's Association. Hot Springs, Ark. November 12–15.

American Public Welfare Association. Statler Hotel, Washington, D. C. November 29–December 5.

Conference on Clinical Anticancer Drug Research. U. S. Public Health Service. Washington, D. C. November 11–12.

National Association for Mental Health. Sheraton Hotel, Philadelphia, Pa. November 17–20.

National Social Welfare Assembly. New York, N. Y. December 8–10.

National Society for Crippled Children and Adults. Palmer House, Chicago, Ill. November 29–December 2.

Planned Parenthood Federation of America. New York, N. Y. November 18–19.

United Cerebral Palsy Associations. Miami, Fla. November 20–22.

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Health Supervision of Young Children. A Guide for Practicing Physicians and Child Health Conference Personnel.
Paper edition—1955. 180 pp. $2.00
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Housing an Aging Population. 1953. 92 pp. $1.00

Methods for Determining Lead in Air and in Biological Materials. 2nd ed. 1955. 69 pp. ... $1.25

Nutrition Practices: A Guide for Public Health Administrators. 72 pp. $1.00

Occupational Lead Exposure and Lead Poisoning. 1943. 67 pp. ..... .50

Principles for Healthful Rural Housing. 1st ed. 1957. 29 pp. $1.00

Proposed Housing Ordinance. 1952. 24 pp. $1.00

Public Exposure to Ionizing Radiation. What Public Health Personnel Needs to Know. 1958. 55 pp. $1.35

Public Health and Hospitals in the St. Louis Area—A Mid-Century Appraisal. 1957. 414 pp. ... $4.50

Public Health Career Pamphlets:
Public Health—A Career with a Future. Revised edition. 1954. ..... .25

Radiological Health Practice. A Guide for Public Health Administrators. 1959. 20 pp. ..... .65

Recommended Methods for the Microbiological Examination of Foods. 1958. 207 pp. $4.50

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